ANUARY, 1950

CHNOLOGY DEPARTME

Flow

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THE MAGAZINE OF MATERIAL HANDLING AND PACKAGING METHODS

FLOW is not the official publication of any group, society or other special interest. Consequently its editorial pages are unbiased and undominated.

THE "ZIP" WORKS FOR PENNIES – SAVES DOLLARS

Every Day!

Want to cut handling costs? Then take a tip — buy a Zip! It's a small investment that pays off in big savings, and not just for a year or two but for years to come.

There's no compromise in design. It's quality-built—from interchangeable mounting right down to the lifting hook — with features you'd expect only in far costlier hoists.

That's what makes the Zip-Lift the fastest selling wire rope hoist on the market. Ask a P&H representative for facts. Or write us today.

Handle it "Thru-the-Air"

P&H ZIP-LIFT

Look At These Added Values

SAFER — Full magnetic control with control current reduced to 110 volts at the push-button. Plugging crane type limit switch and large double brakes provide maximum safety. No open wiring.

LIFETIME CONSTRUCTION — Precision built — shaved gears running in oil — grease-sealed antifriction bearings — fully enclosed, moisture-proof, dust-proof, acid-proof.

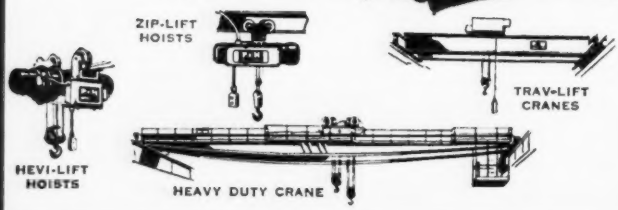
SMOOTHER OPERATION — Motor specifically built for hoist service — to withstand frequent reversal. Loads controlled within a fraction of an inch.

ALERT SERVICE—Out-of-stock delivery from qualified dealers everywhere—backed by 18 branch offices and 8 conveniently located warehouses.

The Zip-Lift is America's fastest selling wire rope hoist. Handle it "Thru-the-Air" at lower cost.

See how handling problems like your own can be solved by the Zip-Lift. Send for this picture-filled book of ideas, applications, specifications, etc. Ask for Bulletin H20-4.

Available in Capacities up to 2000 lbs.



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For Every Requirement

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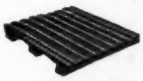
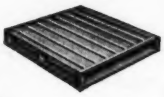


Design 113
All Steel



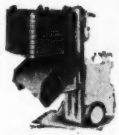
Design 103
All Steel

Design 106
Wood-Steel

BOTTOM DUMP ASSEMBLIES

Style 310
Fork Type

Style 312
Roll-Over

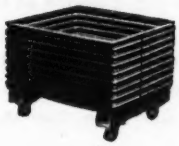


Style 311
Platform Type

CRANE TIERING BOX PLATFORMS

Style 202A

CASTER BOX



Style 309

LIFT TRUCK PLATFORMS

Style 2

CORRUGATED STEEL BOX PLATFORM

Style 200

SPECIAL HANDLING EQUIPMENT

Style 410
Stacking Pallet Rack

Style 310A
Bottom Drop Caster Box

Style 206
Stacking Pallet Box

COLLAPSIBLE CONTAINERS

Assembled

Style 215
Knocked Down

The name POWELL is a guarantee of equipment which is unsurpassed in durability, design and adaptation to the job. Our engineering department is available for consultation—no obligation, of course. Please call . . .

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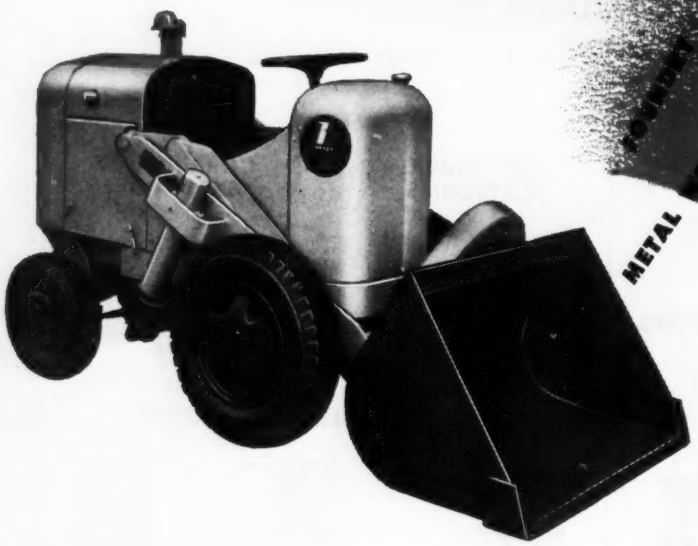
A Fist Full of Facts

How 8 Firms Cut Material Handling Costs with PAYLOADERS



Authorized Job Studies of Operations in eight different industries:

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Proof is in performance, and here are eight separate Job Studies of Payloader operations covering eight different industries, and all authorized and approved by the Management. Each study contains action pictures and data covering the many and varied material handling jobs on which Payloaders are saving time, cutting costs and speeding production in their operations.

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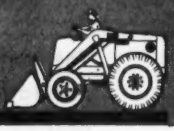

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Company_____

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Flow

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VOL. 5, NO. 4 • JANUARY, 1950

IRVING B. HEXTER, Pres.
LESTER P. AURBACH, V. Pres.

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CONTENTS

COVER PHOTO—This electric lift overcame the handicaps incident to wheeling heavy loads on ramps which connected these three levels at the A. C. Gilbert Co., New Haven, Conn. This was a hazardous job. This elevating unit has not only reduced three working levels to one roadway, but has also speeded the material flow between rail car unloading, processing and storage.

FEATURES

FLUID Press Room LAYOUT—taking the presses to the work.... 17
MODERN FLOW Project For OLD BUILDINGS—how a leading company does it..... 18
How To Determine ELEVATOR LIFTING CAPACITY And SIZE.. 20
INDEX To FLOW ARTICLES For The Last Six Months of 1949.... 22
Pallet Program For Materials In BAGS AND DRUMS—Part II..... 26
BRAKE LINERS And CLUTCH FACINGS In The Material Handling Field—Part 1. Why these friction materials are vital to proper equipment performance 36
MATERIAL HANDLING INSTITUTE OFFICERS FOR 1950..... 53
STOCK SELECTION LADDER TRUCK..... 52

PACKAGING MECHANICS SECTION

Packing Of PORTABLE ADDING MACHINES—first of two photo reports 58
STANDARD WOODEN SHIPPING CASE For Varied Machines—excellent planning job..... 60

DEPARTMENTS

Over The Editor's Shoulder—letters to FLOW..... 10
On The Pallet—news, views and trends..... 42
Men In The News—appointments and promotions..... 35
Institute And Association Chapter Activities..... 50
News From The Sales Field—about equipment distributors..... 55
New Products—equipment of interest..... 62
Opportunities—lines and personnel wanted, etc. 68
Useful Literature—latest publications offered by manufacturers.. 69

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Steel strapped to pallets with Brainard Steel Strapping is stored ready for production at a moment's notice.

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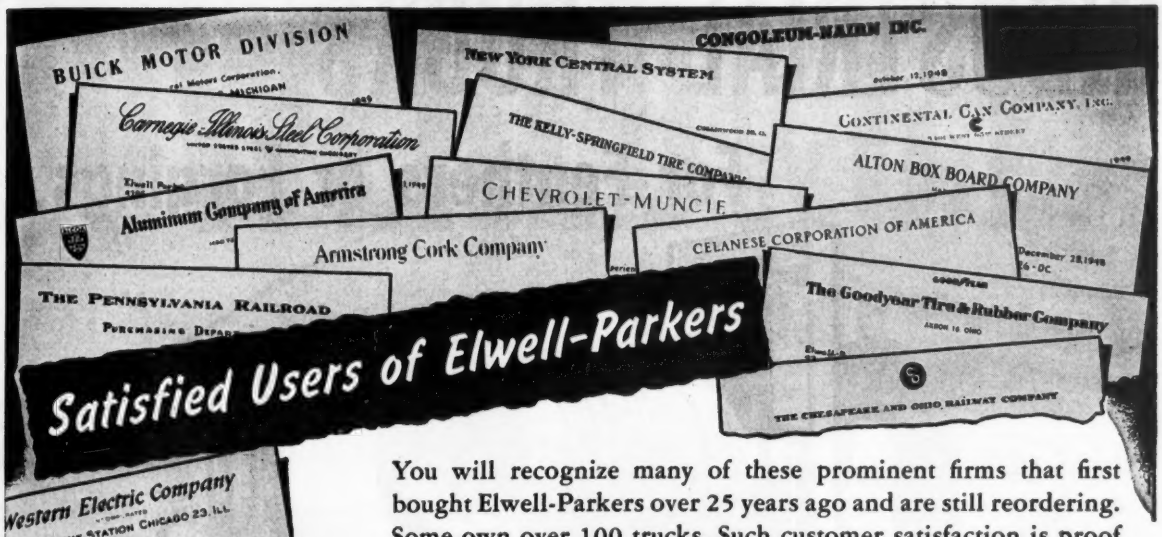

Western Electric Company

LIBBEY-OWENS-FORD GLASS COMPANY
TOLEDO 3 OHIO

CHAIN BELT COMPANY

THE AMERICAN BRASS COMPANY
WATERBURY BRASS GOODS BRANCH

THE NEW YORK, NEW HAVEN AND HARTFORD RAILROAD COMPANY

FISHER BODY DIVISION
GENERAL MOTORS CORPORATION

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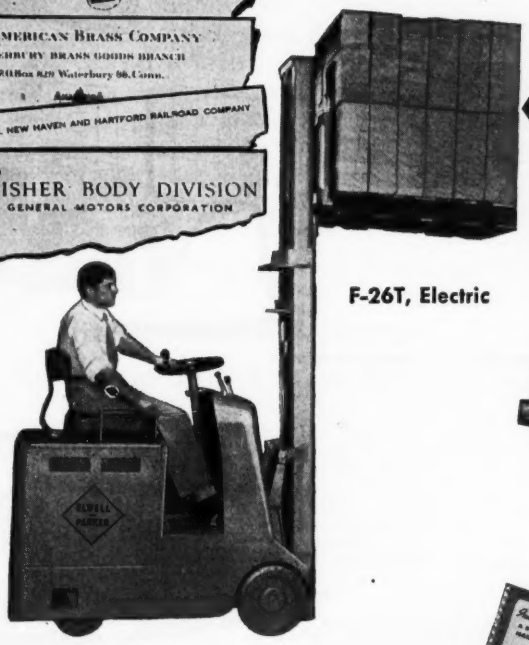
Even though Elwell-Parker knows through long experience that electric trucks are best for most conditions, a line of gas-powered units is being added to meet special requirements. Thus these users need not seek other sources of supply. *Why not join them?*

For example, here are two trucks rated at 2,000 lbs., one—

is electric powered, which makes it more economical under average operating conditions;

and the other being gas powered, is ideal for (1) longer or outside runs; (2) infrequent starting in operating cycle; (3) seasonal operation.



F-26T, Electric

GF-26T, Gas

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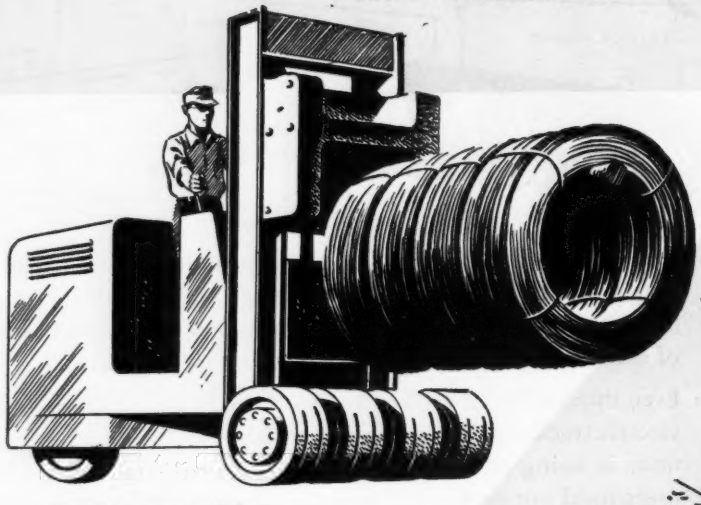
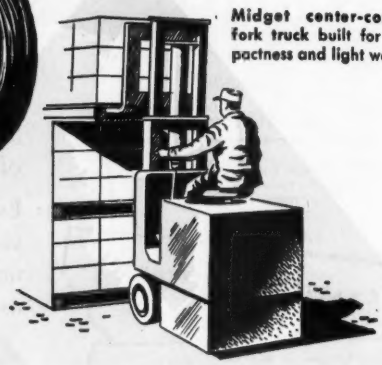
Established 1893

INDUSTRIAL TRUCKS

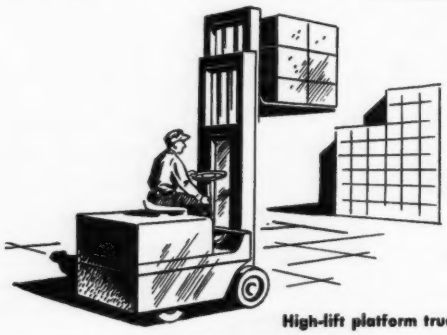
For Feathers or Forgings...



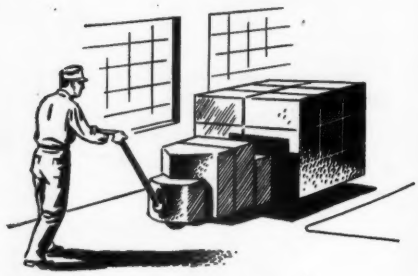
Heavy-duty ram truck built to handle loads up to 15 tons.



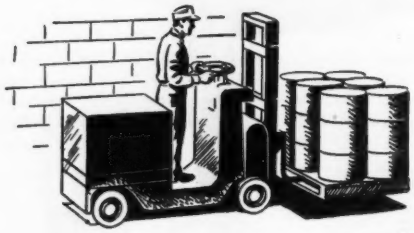
Midget center-control fork truck built for compactness and light weight.



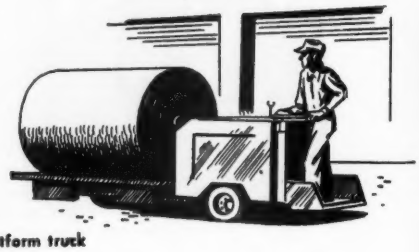
High-lift platform truck



Powered hand truck



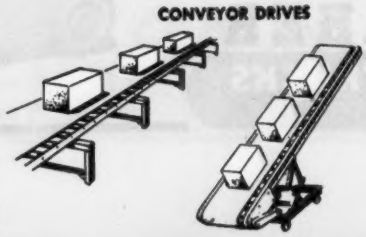
Fork truck



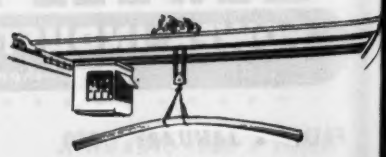
Low-lift platform truck

Everything electrical for MATERIALS HANDLING

CONVEYOR DRIVES



CRANE DRIVES



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TO HELP CUT YOUR MATERIALS HANDLING COSTS

Operating economy, long life, noiseless operation, flexibility of control—these are the major advantages of battery-powered trucks recognized by all industry. In fact, today, the demands of low-cost production make the use of these economical handling devices a practical necessity.

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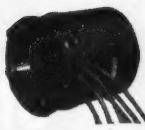
Electrical components can make or break a battery truck. It will pay you to specify equipment of proven quality. Be certain that the trucks you choose are G-E equipped and then insure their efficient operation with G-E battery chargers. ***Apparatus Department, General Electric Company, Schenectady 5, N. Y.***

SEE the latest techniques and equipment in this new film

As a service to industry, General Electric has produced an unbiased, authoritative movie* covering in detail the latest techniques and equipment used in the materials handling field. Write or call your equipment supplier or G-E representative and have this film made available to you and your staff—***without cost or obligation.***

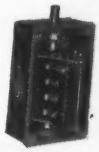
*Part of G.E.'s MORE POWER TO AMERICA program, film is titled "Materials Handling — In Receiving, Warehousing and Shipping."

INDUSTRIAL TRUCK DRIVES



NEW BT Truck Motor. Designed specifically for the battery-truck industry this high-efficiency, small-diameter, round-frame motor withstands heavy overloads and permits dependable, long-life service.

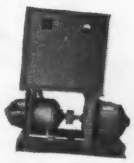
NEW Master Switch. This four-point foot- or hand-operated master switch is enclosed in a dust-tight cast-iron case which thoroughly protects the contacts from contamination—providing long life and reliable operation.



Magnetic Control. Sturdy contactors specially designed for battery-truck service enable this control to provide smooth, trouble-free performance. Equipments for larger trucks may be designed to include time control, acceleration, anti-plugging, and dynamic braking.

BATTERY CHARGING EQUIPMENT

G.E. offers rectifier or motor-generator type charging units to meet your particular requirements—multiple-circuit units for use in a central charging room or single-circuit units for on-the-job charging. All equipment provides precise control for automatic charging to suit individual battery characteristics.



GENERAL ELECTRIC

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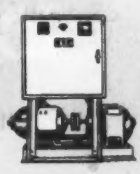
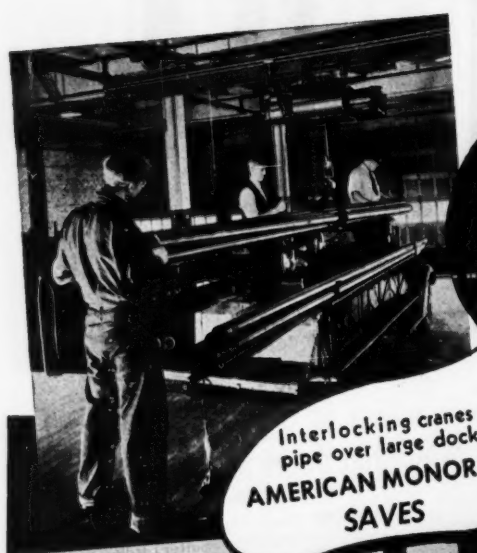
HOIST DRIVES

INDUSTRIAL TRUCK DRIVES & BATTERY CHARGERS





Interlocking cranes move pipe over large dock area.
AMERICAN MONORAIL SAVES

Crane on swinging jibs loads parts from fabrication.
AMERICAN MONORAIL SAVES

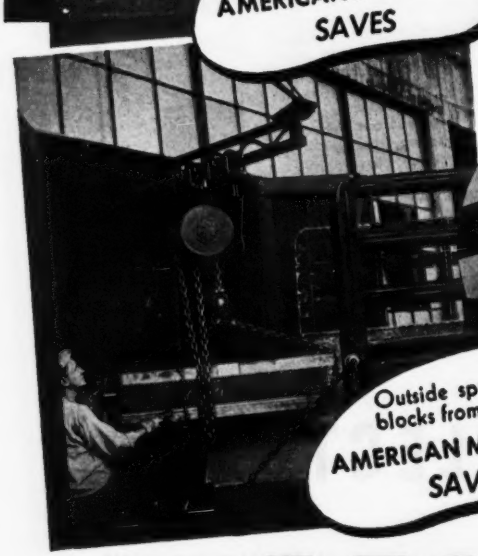
To Reduce Cost of

SHIPPING and RECEIVING

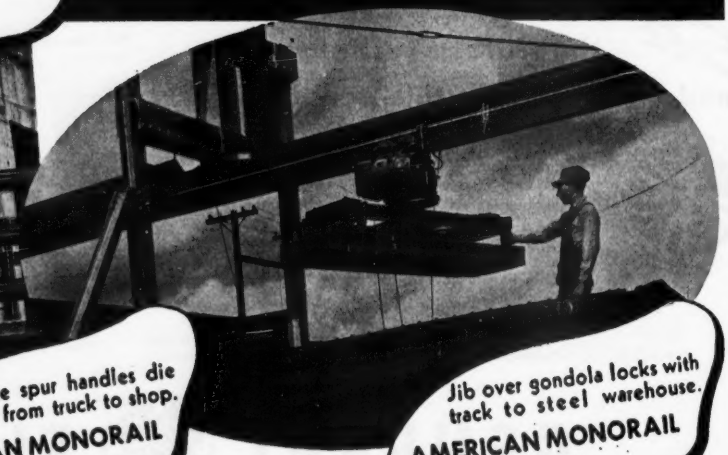
Steel

Use AMERICAN MONORAIL Overhead Handling Systems

Spur track from crane unloads coil to storage yard.
AMERICAN MONORAIL SAVES



Outside spur handles die blocks from truck to shop.
AMERICAN MONORAIL SAVES



Jib over gondola locks with track to steel warehouse.
AMERICAN MONORAIL SAVES

THE AMERICAN MONORAIL COMPANY

13129 ATHENS AVENUE — CLEVELAND 7, OHIO

NEW BAKER FORK TRUCK
Model FT

Costs less to buy—
Does more work per dollar—because of its 100% FUNCTIONAL DESIGN

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64 in. single lift, 63 in. free lift, with 83 in. overall height. Low-pressure hydraulic system for greater safety and lower maintenance.

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BATTERY—36 V., 400-500 Amp.-hrs.

SPARK ENCLOSED CONSTRUCTION—available at extra cost for safe intermittent operation in gas and dust laden surroundings.

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Due to off-center position of operator, cut-away design of dash panel, and construction of uprights and hoist.

OPERATOR CONVENIENCE

Comfortable padded seat and backrest. Entry from either side. Tilted-type automotive steering wheel. Directional, hoist, and tilt control levers to right of wheel. Foot-size accelerator pedal.

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Air-cooled drum type, mechanical. Mounted on motor shaft for braking through gear train and differential, providing equalizing action. Dynamic braking in varying degree obtained by reversing controller and advancing accelerator.

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Provide a softer ride, longer wear, high power efficiency and greater traction.

WORM DRIVE AXLE

Exclusive rugged and simple design for maximum efficiency and long life.

BAKER-BUILT MOTORS

Travel and auxiliary motors designed by Baker especially for industrial truck application.

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Heavy-duty, automotive type shock-proof steer with proper geometry to prevent scrubbing of tires. Knuckle-type axle with rubber-mounted transverse pivot provides compensation for uneven roadways.

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Heavy gauge, unit-welded with integral hydraulic tank. Steel plate bumper providing effective counterweight, welded integral with frame for greater rigidity and strength.

Learn How Little This Truck Costs!

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of The Baker-Raulang Company

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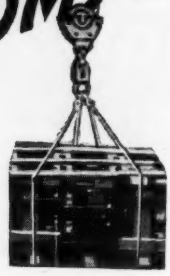

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To FLOW:
In Demand

We wish to put in a request for a subscription to Flow Magazine, to start immediately.—Arthur A. Davis, Manager, Productioneering Co., Inc., Springfield, Mass.

To FLOW:
Crane Specifications

We are regular subscribers to your monthly publication and noticed with interest an article on page 15 of your August issue on the specifications of overhead electric cranes, released by the Electric Overhead Crane Institute.

This particularly interests us as we have been designing and manufacturing overhead traveling cranes for over 20 years, and our designs cover cranes of up to 100 tons capacity and of spans up to 165 feet.

The matter of standardization of crane design is a very important one, and we would be glad if you could arrange with this Crane Institute to forward us say 6 copies of the specification published in your Journal and advise us of any other similar specifications which they have released.

We would also like to know the address of this Institute and have some idea of their general activities and whether they invite connections with overseas manufacturers. —J. A. Cole, Engineering Manager, Malcolm Moore Pty. Ltd., Port Melbourne, Victoria, Australia.

The address of the Electric Overhead Crane Institute is Trinity Court Building, 74 Trinity Place, New York 6, New York.—Ed.

To FLOW:
Washing Pallets

We have been asked by several large pallet users in the food industry ways and means of washing

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with a Hyster® "20"

LIFT TRUCK

THE SAME TRUCK—the rugged, dependable "little" work horse, the HYSTER "20"—operates EQUALLY AS WELL *inside your plant* AS *outside in your* storage yard.

HEAVY DUTY INDUSTRIAL TYPE PNEUMATIC TIRES give the Hyster "20" greatly increased traction, ramp climbing ability, cut down on floor and paving repair and maintenance costs, make higher truck speeds more practical and safer, are easy on the load and driver—EITHER INDOORS or OUTDOORS.

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THE MOVEMENT OF MORE MATERIALS in crowded areas — EITHER INDOORS OR OUTDOORS is done *quickly, efficiently* with the Hyster "20" (2,000-lb. capacity).

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REASONS WHY HYSTER "20" MOVES MORE MATERIALS...

- ✓ Pneumatic tires.
- ✓ Powerful air-cooled gasoline engine.
- ✓ Maximum operator visibility.
- ✓ Load-Grab — For handling many loads without pallets.
- ✓ Special Load-Grab arms available for handling bales, boxes, bundles, bags, barrels, oil drums—without pallets.

Hyster's 7 models range from 2,000-lb. to 30,000-lb. capacity. All are equipped with pneumatic tires.

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Additional information Helpful hints about each product, in addition to technical details, help you find new uses for our products that save money and increase efficiency.

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AEROL WHEELS ★ CASTER RIGS ★ HAND TRUCKS

and deodorizing hardwood pallets in an economical manner.

The pallets of one of our clients are being loaded alternately with raw food products and other substances such as soaps, oils, greases, etc. They state in their American plants these products are separated as to plants and hence do not run into the same difficulty. However, the same problem has probably arisen in other American plants and we have searched Flow Magazine for several months endeavoring to locate an article regarding this. —G. R. McConvry, McConvry-Mudge Limited, Toronto, Canada.

Most pallet specialists had never heard of this problem, particularly since in this country large enough pallet inventories are maintained by plants to segregate them in regard to the uses mentioned. For this reason the suggestions received from two U. S. manufacturers are of particular interest. The first is from the Acme Pallet Co., the second one from the Philadelphia Division of The Yale & Towne Mfg. Co.

"The only really economical way we know of to do this is to flush the pallet with a high-pressure hose using clear water and then to expose the pallets to the fresh air for a sufficient length of time to eliminate the odors which they have absorbed."

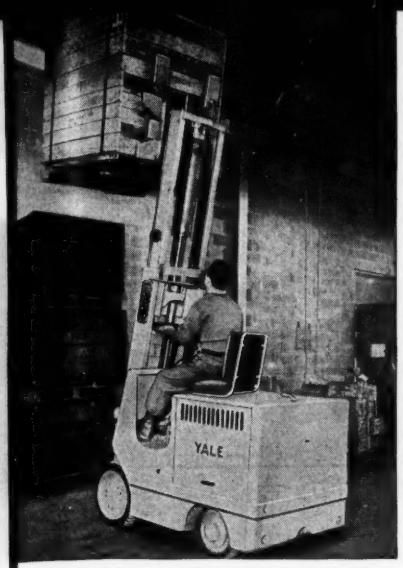
"The question of keeping hardwood pallets clean has come up particularly in the Soft Drink Bottling Industry. There they have found that the standard cleaning compound which is used in bottling plants is very satisfactory for keeping the pallets clean.

"This problem is important enough to justify a steel pallet which is easier to keep clean. Samples of this new pallet were shown at the Bottlers Show in Detroit." —Ed.

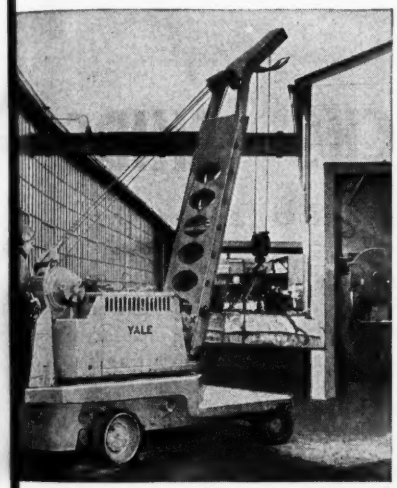
1949-50 FLOW DIRECTORY
Copies of the new and revised Directory are available at $5 each. An invaluable manual for the material handling engineer, production executive, and purchasing agent.

Break bottlenecks in production and your

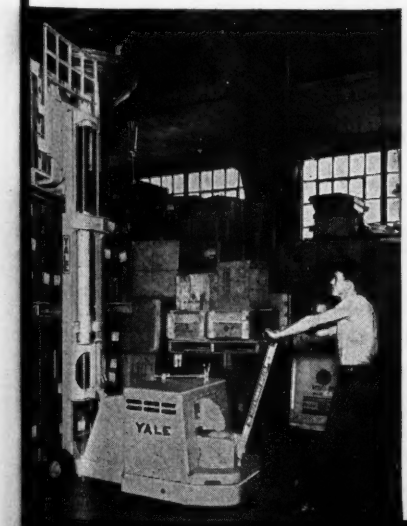
COSTS TUMBLE



...goes a pallet load. High stacking of multi-unit loads puts storage space to fullest use. Yale High Lift Work Trucks handle loads up to 30,000 lbs. in a single operation. High Lift Platform Trucks have capacities up to 50,000 lbs. Low Lift models, to 60,000 lbs.



Yale Crane Trucks are used to lift and stack all kinds of loads in plant and yard. They also transport material, speed assembly of machinery and handle many maintenance jobs. They slew and boom easily, travel fast. Capacities up to 10,000 lbs.



Production gets in a jam when material isn't kept "on the move." If you are up against this problem in your plant, it will be well worth your while to learn how modern material handling machinery can open the way to greater output.

Right now you may not know exactly what kind of handling equipment will do the best job and save money at the same time. So your best bet is to get the benefit of the experience of Yale & Towne, pioneer in the manufacture and correct application of material handling machinery.

The Yale line of material handling machinery is so complete and diversified that selection for specific requirements is easy. Whether you need hand or electric hoists, hand lift or power trucks or scales, Yale representatives throughout the nation and the world will gladly help you find ways to break production bottlenecks, save time and effort and cut handling costs.

Take care of the present and plan for the future with Yale Material Handling Machinery. Get in touch with our nearby representative or write direct to headquarters.

TOOLS THAT KEEP INDUSTRY "ON THE MOVE" **YALE**

THE YALE & TOWNE MANUFACTURING CO.

Department L-89

Roosevelt Boulevard **Philadelphia 15, Pa.**

This Worksaver Electric Truck has a telescopic lift of 10 feet and can handle loads up to 3,000 lbs. The operator steers the truck as he walks. Lift and tilt are hydraulic. Nine other Worksaver models include high and low lift platforms, pallet and tin plate, and a tractor.

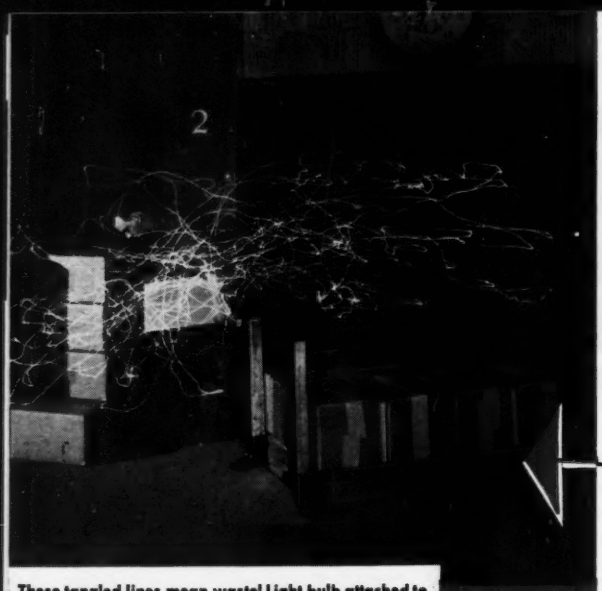
Yale Load King Scales provide the unparalleled accuracy of the exclusive MAGNETROL mechanism. They speed weighing, batching, counting, measuring and testing. There's a model for every industrial need—every type from bench to crane scales. Capacities to 60,000 lbs.

Fragile loads are handled safely and efficiently by th fast Load King Wire Rope Electric Hoist. Yale mak time and effort saving electric hoists in capacities up 12 tons. Hand chain hoists are built to lift as much 40 tons.

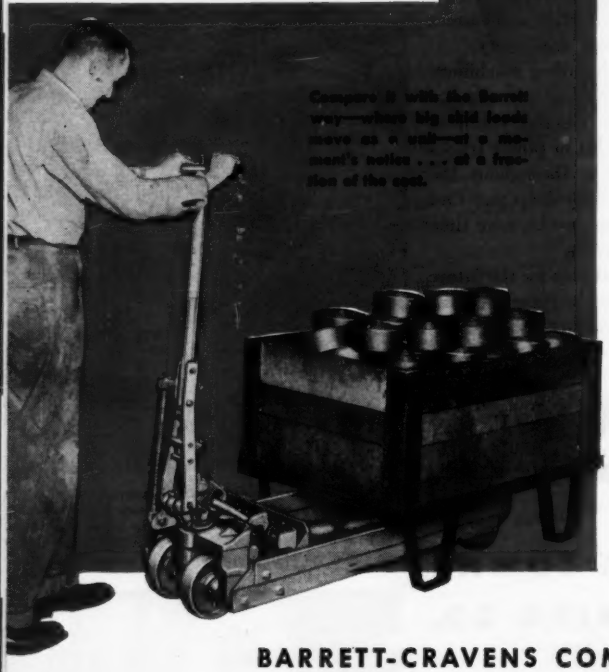
"Easy lift, easy roll, easy steer" summarizes the qua ities of Yale Hand Lift Trucks. Because they can hand so much in a single trip, they help break productio bottlenecks. Capacities range up to 20,000 lbs. Platform pallet and tin plate models.

YALE

MATERIAL HANDLING MACHINERY · hoists . . . hand and electric · trucks . . . hand lift and power · industrial dial scales



These tangled lines mean waste! Light bulb attached to the man's wrist gives you the actual camera's record. Figure the time—the effort—the cost . . . *wasted!*



Compare it with the Barrett way—where big skid loads move as a unit—at a moment's notice . . . at a fraction of the cost.

stop!

this waste motion NOW!

BARRETT LIFT-TRUCKS *and* SKIDS *are the Low-Cost way!*

Why pay for more costly, elaborate equipment when Barrett Lift-trucks and Skids provide the basic answer to your handling requirements? Actually, the big cost factor to eliminate is the repeated loading and unloading . . . piling and unpiling.

You end all this with the thrifty Barrett System. Then, from room to room, floor to floor, in and out of storage . . . loads *stay* on the skids, always ready to roll with a sweep of the Lift-truck handle. It's quicker, easier and far more practical. And best of all . . . *one man does the work of three or four!*

Write for full details.

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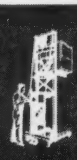
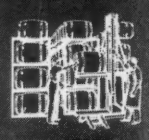


PORTABLE ELEVATORS

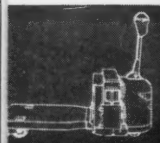


STEEL STORAGE RACKS

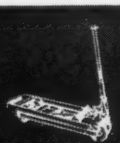
BARRETT

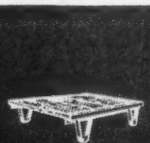
ONE MAN DOES MORE THAN 3 OR 4 . . . WITH A BARRETT

Barrett Handling Equipment



ELECTRIC LIFT-TRUCKS



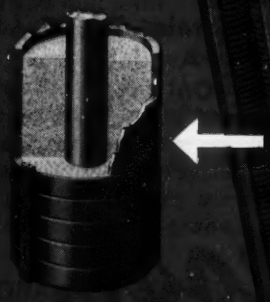


SKIDS

BARREL TRUCKS

SKID SYSTEMS

EXIDE-IRONCLAD PLATES *are DIFFERENT*

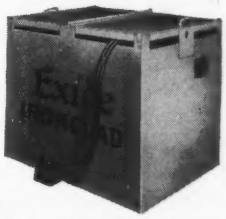


Enlarged cutaway view of section of tube containing active material. So small are the slots shut, while permitting easy access of electrolyte, they retard the active material from readily washing out or clotting fence.

The famous and exclusive Exide-Ironclad positive plate is the result of sixty-two years of battery-building experience. During that time we have learned much about the design and construction of every type of battery for every application. Development work never ceases in improving the performance of Exide-Ironclad Batteries. Our research staff is the largest in the industry. Engineers, chemists, metallurgists, physicists, technicians and their aides, equipped with all the necessary tools and devices, are constantly building and testing various types and kinds of plates and assemblies.

We have yet to find a positive plate with all the desirable characteristics of the Exide-Ironclad for use in battery electric industrial trucks. Further proof of its superiority is supplied by long service records in thousands upon thousands of installations.

Exide-Ironclad Batteries provide high power ability, high electrical efficiency, ruggedness, long life, minimum maintenance. The combination of these Exide-Ironclad characteristics assures years of dependable day-in, day-out service . . . *at lowest cost.*



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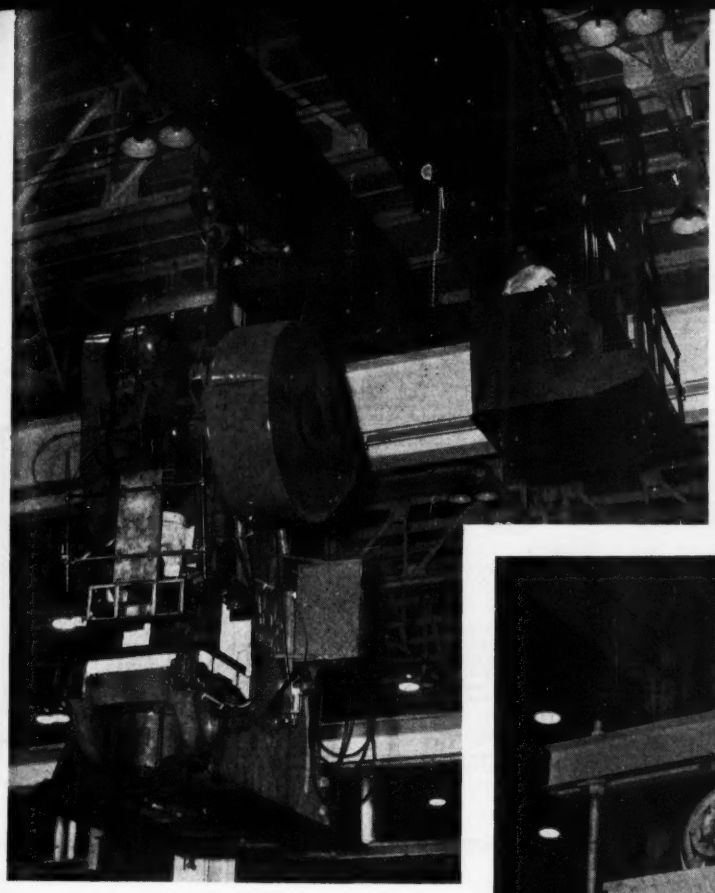
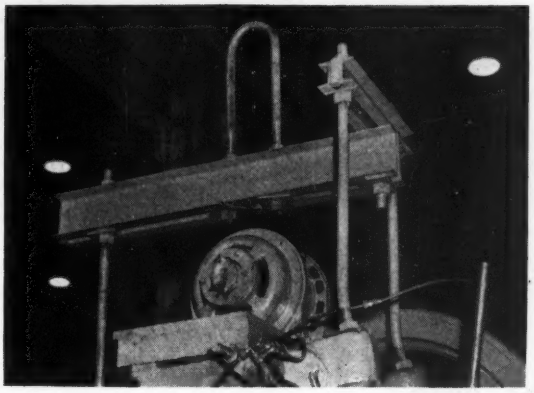


BRIDGE CRANE, ACCORDION ROLLER CONVEYOR, SKID BINS.

◀ BRIDGE CRANE is transporting press to basement pit for progressive flow of components.

▼ TWO-WAY BALE was designed to give perfect balance (front-back, sideways) when suspended.



Fluid Press Room Layout

When too much inter-machine handling is involved in your press shop, it may be more economical to move the presses to the work instead of the work to the presses. Here is how Carrier Corporation's floating press room works—by use of a 10-ton bridge crane.

DONALD W. PENNOCK
Carrier Corporation, Syracuse, N. Y.

WHEN Carrier Corporation took over the new Thompson Road plant about two years ago, a big objective was to merge a large-scale job operation with a growing production schedule in its punch press department.

The sheet metal components include large and varied parts for heavy air conditioning, refrigeration and industrial heating units. While few single press runs are ever very large, the total tonnage in Carrier's biggest year has reached an 18,000,000 lb. mark. Progressive operations were thought to be the key to an economical function. Excess inter-operational handlings with attendant floor congestion and tie-up of equipment had to be avoided.

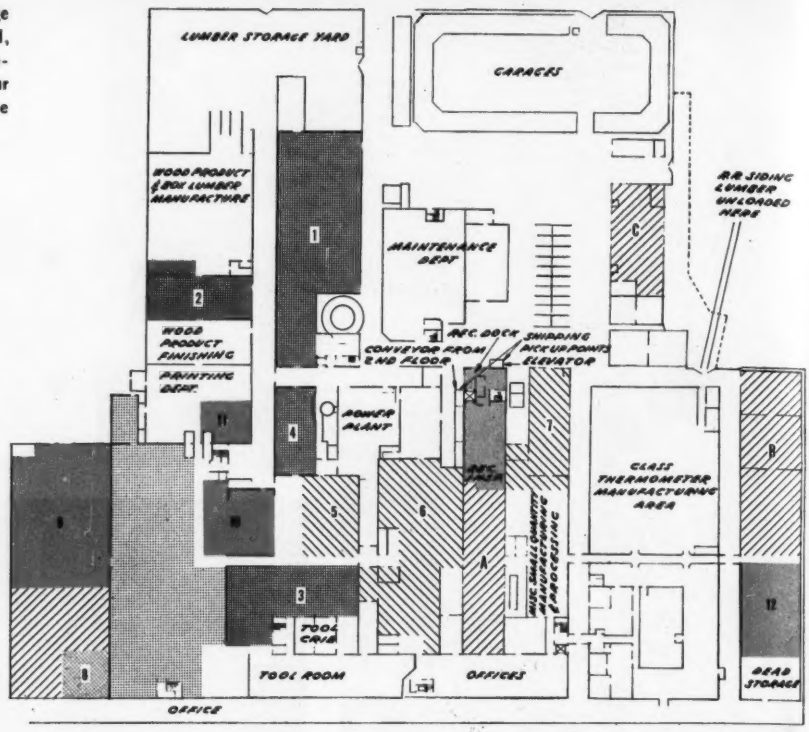
Mobility—a "floating" layout of the smaller general-purpose presses —proved the answer, which was developed after a year's intensive research by Carrier engineers. By keeping these miscellaneous presses as well as some small brakes portable, this equipment could be grouped in any desired sequence (around the large presses) in making any part. All service connections (for air and power) are of the plug-in type.

The large permanently installed presses are grouped in two lines in a basement type pit at one end of the shop. The smaller presses, ranging in capacity from 12 tons to 106 tons, are equipped with bales for crane handling. These latter are the presses that are taken to the work.

The press shop bay is served by a bridge crane of 10-ton capacity which usually transports the

(Turn to page 32)

OLD: A, B, C and D are storage areas for incoming materials. 1, 2, 3 and 4 are machining and fabrication departments. 5, 6, 7 and 8 indicate four finishing areas, while 9, 10, 11 and 12 are finished parts stores.



By W. C. COPE

Plant Layout Engineer
Taylor Instrument Companies,
Rochester, N. Y.

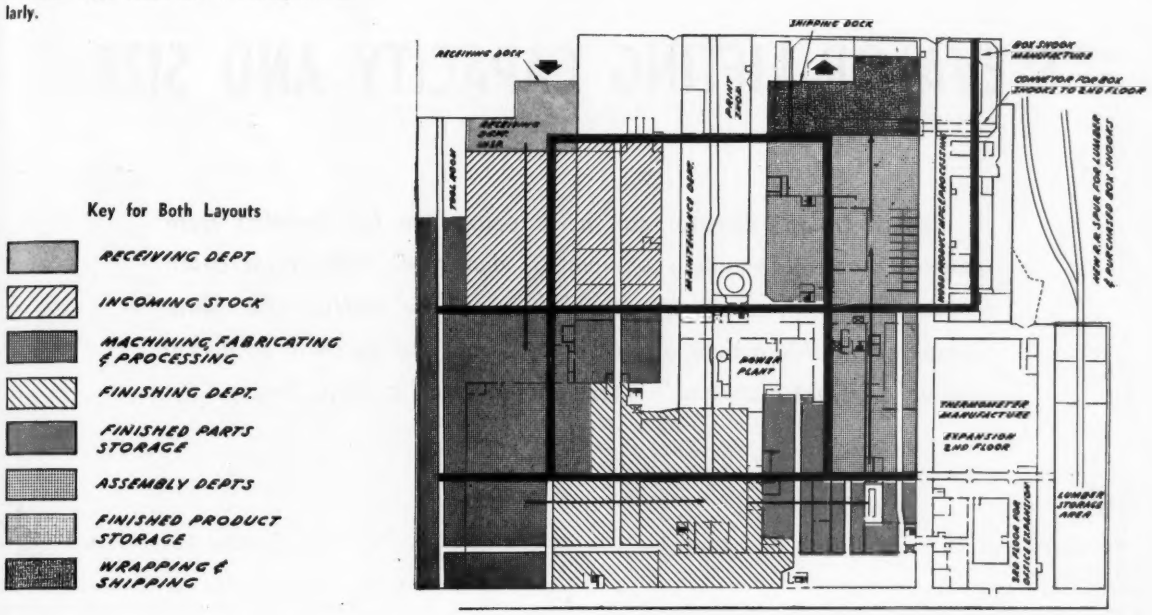
It can be done...

Modern Flow Project for Old Buildings

AFTER the war, spanking-new plants made dramatic news in the public and trade prints; at the same time other postwar expansion and material handling improvement projects were launched quietly in many a venerable factory building around the country. While the job of these latter plants escaped public notice, it was no less important than that of the glamorous production edifices. Perhaps more so—for the simple reason that a good many old plants were badly in need of flow engineering. The application of flow procedures in buildings that have served for decades calls for more-than-average resourcefulness and engineering ingenuity. And plain guts to see the project through. In shops throughout the country, old receiving platforms were torn out and rebuilt elsewhere, departments were regrouped, machine layouts changed radically, and new handling techniques were developed to keep pace with new production equipment. Thoroughgoing flow engineering projects thus came into being behind time-mellowed brick walls covered with ivy. This was a matter of coming to grips successfully with the problem of "making do"—and the solutions are giving other engineers guidance in coping with the problems still ahead of them.

An outstanding material flow improvement project is currently being tackled by Taylor Instrument Companies, one of the old-line Rochester craftsmanship concerns whose instruments are known to homemakers, medical men and industrial technicians throughout the world. Particularly noteworthy is the 25-year goal which has been set for the realization of the full-scale program, while parts of it are being worked out step by step. This approach should be encouraging to many still confronted with a similar task. Among other things, it underscores the importance of developing, first, a plan and a method of procedure; it also suggests that modern material flow principles need not wait on new building construction.—Ed.

NEW: Heavy lines show proposed express aisles. All functions are planned for progressive material flow in "V" pattern, eliminating scattered and duplicated stations. Upper floors will be revamped similarly.



THE two layouts on these pages —one "old" and one "proposed" —give you the gist of our company's long-range material flow improvement project. After the war, Taylor Instrument Companies approached the problem of a plant-wide rearrangement program, involving departments in more than a score of buildings.

An over-all plan was essential; we did not want to add manufacturing space (for future expansion) without knowing where we were going. The complexity and scope of the problem explains why the project was approached with a 25-year plan in mind. While we realized that the master plan would be modified in part as time went on, it was considered valuable as a guide and a goal. The master plan also facilitates its step-by-step realization; it is subdivided into intermediate steps which bring us down to the present. This procedure enables us to dovetail present expansion and rearrangement into future plans.

Facing Up to the Job

Some understanding of our production methods is necessary for an idea of what is involved in the plan. Taylor Instrument Companies is known as a manufacturer of a highly diversified line of instruments for the indicating, recording and controlling of temperature, pressure, flow, liquid level and humidity. To this list must be added numerous medical and weather instruments for household and professional purposes. The total is approximately 8000 variations in the basic line. This diversification, in turn, indicates a coordinated craftsmanship shop, as compared with the more predominant mass-production plants making a huge volume of comparatively few items.

This brings us to the layout problem. The main plant was built in 1906, by wings, and to the original three, others have since been added. However, from the standpoint of flow engineering the addition of wings meant the multiplication of fire walls, which impeded the flow by creating small, blocked-off areas. In these it was difficult to set up machining or assembly departments of the size needed by the growing business. Another problem which is shared with many other companies was the matter of column spacing. Most bays are on 16 ft. centers, with many of the aisles limited to a width of six feet. This is a limiting factor when you introduce power trucks. Court areas and limited floor load capacities also aggravate the problem.

The general pattern is shown in the "old" block type layout on these pages. The areas in these buildings total to just under 400,000 sq. ft., which includes space for manufacturing, shop offices and warehousing. While a total of 8000 variations in the basic line are made, there are relatively few large runs.

While receiving, for example, is located approximately at the center

(Turn to page 44)

How to Determine

ELEVATOR LIFTING CAPACITY AND SIZE

A modern freight elevator can help realize the full benefits from modern material handling equipment, and meet today's increased production requirements by speeding inter-floor traffic.—The data presented in this article are excerpted from the recently published manual "Freight Elevators," Westinghouse Electric Corp., Jersey City.

The selection of the proper capacity and size of freight elevators follows no well-defined pattern. Each installation is an individual study of many factors. Basically, the following information must be known:

Building Characteristics

The building characteristics which determine the freight elevator operation are:

FLOORS. Number of floors. Floor heights. Number of floors requiring front and rear elevator entrances.

TRAVEL. Distance from first floor to top floor.

STRUCTURAL CONDITIONS. For supporting the elevator. For elevator space requirements.

Elevator Loads

The actual loads to be carried on the freight elevator and the method of loading should be determined. Actual Loads. The maximum weight and size of the loads. Packaged or boxed units. Heavy machinery. Bulk loads.

Method of Loading

It should be known whether hand trucks or power trucks will be used, whether the trucks will ride with the loads, and what the weight of the trucks are. Particular attention should be given to frequent unusual loading requirements peculiar to the individual plant or industry, since uniformity of unit loads in weight or dimensions is not always practicable each time the elevator is loaded. These and other loading factors, particularly capacity and car size, bearing on elevator practices should be analyzed carefully so that no needless limitation is imposed on the overall availability and efficiency of the freight elevator installation.

Specific Requirements

The following factors must also be taken into account since each elevator installation must be based upon the specific requirements of a particular building. (1). The number of units to be handled per hour in each direction. The load per hour in pounds. The tonnage per day. (2). The probable cycle of operation and the principal floors served during the peak of the cycle. (3). The number of passengers, if any, the elevator will handle during periods of peak passenger traffic.

The above considerations suggest that the selection of the proper capacity and size for a particular freight elevator installation involves a detailed study of the entire material handling equipment of which the elevator is a part.

Capacity and Loading

The table at left lists sizes for platforms and openings as standardized by the industry to provide economical freight elevators. 1. The clear inside car depth is 8 inches less than the platform depth for two openings. 2. Several capacities are listed in the table for certain platform sizes. These are necessary to meet industrial requirements for handling both heavy and light products. The probability of platform overloading is reduced to a minimum by installing the smallest platform that is adequate to carry the load.

3. The dimensions of the units handled and the size of the pallets, skids or hand trucks used determine the dimensions of the car for a given capacity. Unless the hoistway size is fixed, the platform should be a standard size to avoid the higher cost of a non-standard platform. Standard eight foot high cars are generally used up to 10,000

(Turn to page 48)

Inside Car Size		Standard Platform Size		Standard Car Opening Size	Standard Capacity Rating in Pounds
WIDTH	DEPTH	WIDTH	DEPTH		
5′0″	6′6″	5′4″	7′0″	5′0″ x 8′0″	2500, 3000
6′0″	7′6″	6′4″	8′0″	6′0″ x 8′0″	2500, 3000, 4000
8′0″	9′6″	8′4″	10′0″	8′0″ x 8′0″	4000, 5000, 6000, 8000
8′0″	11′6″	8′4″	12′0″	8′0″ x 8′0″	5000, 6000, 8000, 10,000
10′0″	13′6″	10′4″	14′0″	10′0″ x 8′0″	10,000
10′0″	15′6″	10′4″	16′0″	Usually determined by load characteristics.	12,000
10′0″	19′6″	10′4″	20′0″		14,000
12′0″	15′6″	12′4″	16′0″		16,000, 18,000, 20,000
Special		Usually determined by load characteristics.			24,000 30,000

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for easy handling in tight spots!

2 SPEEDS FORWARD and REVERSE
—another Towmotor efficiency feature

A lift truck travels in reverse 50% of the time. That's why Towmotor has 2 speeds forward, 2 speeds reverse—offering fast travel in both directions.

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Index To Flow Articles for the Last Six Months of 1949

Titles are generally listed by type of product or industry. Where the editorial treatment requires a deviation from this practice, as in the case of the FLOW Cost Analysis Contest papers, for example, the listings are repeated under product headings as well. Example: The Cost Analysis Contest paper "Low-Cost Shingle Storage" appears also under "Building Supplies." The same scheme, designed for the convenience of readers, is also followed in regard to articles in the Packaging Mechanics section.

AIR-FREIGHT TECHNIQUES

Material Handling In The Air Age. Part I. October, p. 22.

Material Handling In The Air Age. Part II. November, p. 38.

ASSEMBLY AND LIGHT FABRICATION OPERATIONS (METALS)

Synchronized Conveyor Assembly. July, p. 24.

Conveyor Assembly (planned for (a) easy handling, (b) safety, (c) work levels, (d) re-arrangement of work stations). August, p. 13.

Improved Handling Keeps Shotgun Assembly Cost Down. October, p. 36.

BUILDING SUPPLIES

Low-Cost Shingle Storage. September, p. 50.

CEMENT

(Handling from bagging to outbound vehicles.)

It's In The Bag. July, p. 62.

CERAMICS (CLAY PRODUCTS)

The Box That Helped Solve A Breakage Problem. September, p. 73.

COPPER TUBE MILL LAYOUT

Long Lengths In A Compact Space. September, p. 25.

COST ANALYSIS CONTEST PAPERS

We Sliced The Cost Of Handling In Half. August, p. 32. (Application for mining supplies in extremely difficult terrain.)

Low-Cost Shingle Storage. September, p. 50.

Improved Handling Keeps Shotgun Assembly Cost Down. October, p. 36.

A Department Store Brings Flow To Its Ready-To-Wear Operation. November, p. 42.

Pallet Program For Materials In Bags And Drums. Part I. December, p. 32.

ELECTRIC OVERHEAD CRANES

Electric Overhead Cranes For Standard Service (Specifications For). Part I. August, p. 15. (Released by the Electric Overhead Crane Institute.)

Electric Overhead Cranes For Standard Service (Specifications For). Part II. September, p. 42.

ELEVATOR APPLICATION (INTER-FLOOR TRAVEL)

How To Engineer Factory Elevator Requirements To Production. August, p. 24.

FLOOR COVERING

A Safe, Low-Cost Method For Rolls Of Linoleum. October, p. 28.

FLOW ENGINEERING DATA PAGE

Data for the engineer, and others responsible for material handling, on equipment design and application aspects. Every month, except October.

FOOD AND BEVERAGE PRODUCTS

Overhead Conveyors Add Packaging Space. August, p. 46.

Industrial Packaging For Industrial Catering. September, p. 77.

Flow Methods For Pickles. November, p. 68.

FOUNDRY APPLICATIONS

Automatic Dispatch System For Core Sand. September, p. 28.

GENERAL (ARTICLES OF TOPICAL INTEREST)

Fourth Annual Industrial Packaging And Material Handling Exposition. September, p. 72.

FLOW Starts Its Fifth Year (an editorial). October, p. 13.

Briefs of S.I.P.M.H.E. Papers From Fourth Annual Industrial Packaging & Material Handling Exposition. December, p. 40.

GLASS PLANT

Monorail Moves Millions Of Pounds—With Two Operators Per Shift. August, p. 18. (Describes batching and furnace feeding.)

INDEX (To FLOW Magazine Articles)

Index To FLOW Articles For The First Six Months Of 1949. July, p. 35.

LOAD UNIT TECHNIQUES

Big Results From Load Unit Refinements. July, p. 21.

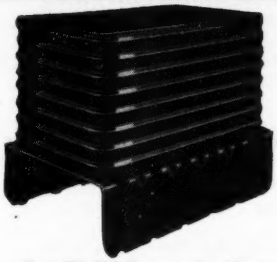
How To Unitize Paper Bags For Shipment. November, p. 30. (Two different methods are described.)

A $2.12 Per Ton Handling Cost Is Cut

get it there FASTER

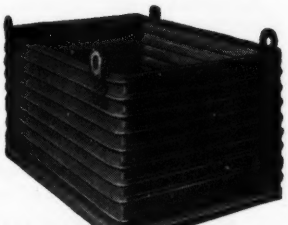
get it there BETTER

get it there CHEAPER



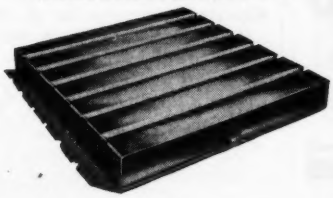
Type PB-120 Truscon Steel Box and Platform.

Type P-1. Truscon One Piece Steel Skid Platform.



Type B-80C Truscon Box Equipped for Crane Handling.

Truscon Double Face Steel Pallet.



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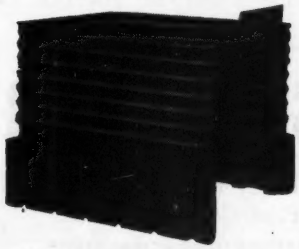
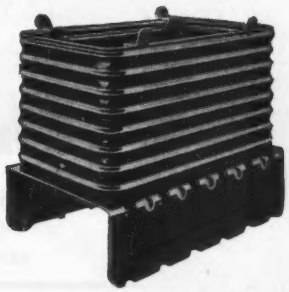


Type PB-650 Truscon Box and Platform with sliding End Door.



Type PB-120T. Truscon Steel Box and Platform with Tiering Lugs.

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Production Time
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MASTER REDILIFT Trucks
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POWERMASTER Stackers
FLOORMASTER Trucks
SHIPMASTER (All-Steel 2-Wheel) Trucks
WELDMASTER Platforms
LOADMASTER Racks

WRITE FOR BULLETIN NO. 25

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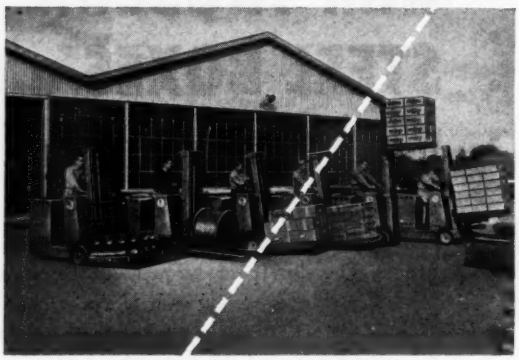

Smart fleet of "SPACEMASTER" Electric Fork Trucks handle many kinds of materials in this public utility warehouse.

"SPACEMASTER" Electrics operate quicker, in less space. "SPACEMASTER" Electrics have low cost maintenance, less down time. "Standrive" feature lets operator pivot and turn and thus safely trail load. No need to turn truck and load around as his vision is unobstructed. Better visibility also permits accurate placement of forks and spotting of loads . . . "Deadman" brake; greater stability; plus free, quick access from either side give greater SAFETY . . . Send For Bulletin 25 Today!

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REPRESENTATIVES IN PRINCIPAL CITIES

To $1.26. November, p. 32.

MAINTENANCE OF EQUIPMENT
Maintenance—The Parts. July, p. 37. (The concluding installment of a three-part article. The preceding two covered organizational and how-to-do-it aspects of the subject.)

METAL FABRICATION
5-Room Homes By Conveyor Flow. November, p. 27.

MISCELLANEOUS TECHNIQUES
Ideas You Can Use (Tested techniques for better production). A periodic department which presents a variety of handling methods gathered from numerous sources. October, p. 38, November, p. 58, and December, p. 30.

ORDER ASSEMBLY, WAREHOUSING AND SHIPPING
Wholesale Grocery Layout For Minimum Travel. July, p. 22.
A $2.12 Per Ton Handling Cost Is Cut To $1.26. November, p. 32.

PACKAGING MECHANICS SECTION
A Neat, Safe Package For A Heavy Assembly. July, p. 60.

It's In The Bag. July, p. 62.
Good Conveyor Layout In Tobacco Packaging. July, p. 65.
Overhead Conveyors Add Packaging Space. August, p. 46.
Continuous Packing, Warehousing On Two Floor Levels. August, p. 49.
The Box That Helped Solve A Breakage Problem. September, p. 73.
Industrial Packaging For Industrial Catering. September, p. 77.
Practical Cushioning And The "Perfect Package". October, p. 56.
Welded Twin Package. October, p. 61.
Wrap Up A House—In One Package. November, p. 62.
Flow Methods For Pickles. November, p. 68.
Tested For Perfection. December, p. 44.

PAINT PLANT OPERATION
Pallet Program For Materials In Bags And Drums. Part I. December, p. 32.

PULP MILL APPLICATION
Air Circuits For Turnover Stacker (for pulp mill conveyor system). October, p. 16.

PUNCH PRESS OPERATIONS
Gravity Conveyors In A Multi-Press Layout. September, p. 54.

RAILROAD SHOP PRACTICES (FOR RECONDITIONING WHEELS)
How The Erie Keeps The Wheels Rolling. Part I. September, p. 32. (The latest shop of its kind.)

How The Erie Keeps The Wheels Rolling. Part II. October, p. 24.

READY-TO-WEAR APPAREL
A Department Store Brings Flow To Its Ready-To-Wear Operation. November, p. 42.

RECEIVING (OF OPERATING SUPPLIES)
Centralized Receiving For Supplies. December, p. 11.

REFRIGERATED WAREHOUSE OPERATION
Refrigerated Warehouse Handling. September, p. 23.

STEEL MILL APPLICATION
Now—Turn Blooms Without Tongs. July, p. 31.

STEEL WAREHOUSING
The Last Word In Receiving, Inspection, Storage Of Raw Steel. December, p. 12.

STONE HANDLING (SAND STONE FABRICATION AND SORTING)
Stone Handling Brought Up To Date. July, p. 42.

TOBACCO
Good Conveyor Layout In Tobacco Packaging. July, p. 65.

WAX PRODUCTS
S. C. Johnson & Sons Company's Welded Twin Package. October, p. 61.

YARD HANDLING (FOR BULK MATERIALS AND METAL COMPONENTS)
A Yard Crane Feeds The Entire Plant. July, p. 27.
A Craneway For Yard Receiving, Storage, Disbursement. October, p. 14.

100-TON CASTINGS OR OYSTERS —Oysters that have been snugly packed in barrels by a new vibrating machine are arriving on the market in better condition than ever before, according to the J. & J. W. Elsworth Company, 110-year-old Greenport, Long Island, oyster firm. The barrel shaker, similar to machines that can bounce 100-ton foundry castings and shake frozen coal from railroad coal cars, settles the oysters in the barrel more gently and much faster than it can be done by hand. The agitating machine also eliminates the back-breaking practice of rocking and rolling the 250-pound barrels by hand to settle the oysters, a method which inevitably damaged some of the shells. As the oysters in the shell move along the production line at the Elsworth plant from the rinsing stand, they are packed in barrels of three-bushel capacity and placed on one end of the shaker platform where the vibration not only settles them firmly in the barrel but (because of its eliptical motion) actually moves the barrel along the seven foot platform and discharges it at the other end. The shaker does its job in less than 30 seconds.—**Courtesy, Hewitt-Robins Inc.**

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And food, forgings and fertilizer! Every working hour, these and hundreds of other products are handled efficiently and economically on cost-reducing, space-saving Rapistan Material Flow Equipment.

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SEND FOR YOUR FREE COPY of "Rapistan Material Flow at Work!" See how carloading was cut from 80 to 8 man hours . . . a processor saved $200 weekly . . . how unloading costs were cut from $17.10 to $1.90 per car . . . and how Rapistan can work for you.

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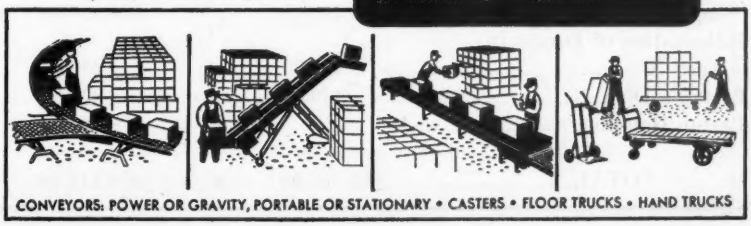
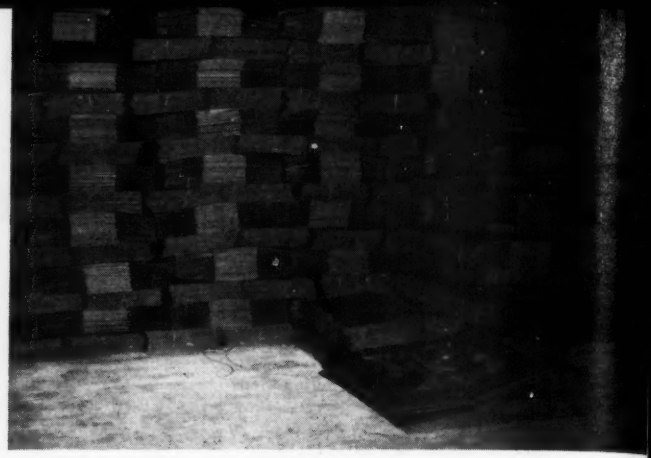


CONVEYORS: POWER OR GRAVITY, PORTABLE OR STATIONARY • CASTERS • FLOOR TRUCKS • HAND TRUCKS

EXPENDABLE paper board pallets with 50 lb. bags. View is after trip in the car.



OLD METHOD: Each of these many bundles of carton flats had to be handled singly.

Pallet Program for Materials in

DISPOSABLE AND RETURNABLE PALLETS. FORK LIFT TRUCKS AND WALKIE TYPE TRUCKS.

PART II

The installation of the program required an expenditure of $26,463.00 which will be amortized in less than one year. An annual saving of $32,000.00 has been made possible by this program. Second and concluding part.

Portable Docks

IN AREAS where no docks were available to permit the entry of lift truck equipment into cars for loading or unloading, the use of portable docks was introduced. These docks can be adjusted to the same level as the floor of the car and are large enough to permit handling of two pallet loads at one time to minimize any delay to either the fork truck operator or the man loading the pallets.

Materials are loaded on the pallets in the car and the pallets placed on the portable dock by means of hand pallet trucks, either power driven or manually operated. When unloading drums, the empty pallets are placed on the portable dock and the drums loaded on the pallets by a two-wheel hand truck. This method has reduced the unloading time two manhours per car. Six carloads are unloaded each week.

OPERATION	COST OF INSTALLATION	ANNUAL SAVINGS
Unload, store and deliver bagged materials	$23,263.00	$24,539.00
Palletization of Drums in Yard X	3,100.00	4,200.00
Portable Docks	100.00	875.00
Carton Handling		2,500.00
TOTAL	$26,463.00	$32,114.00

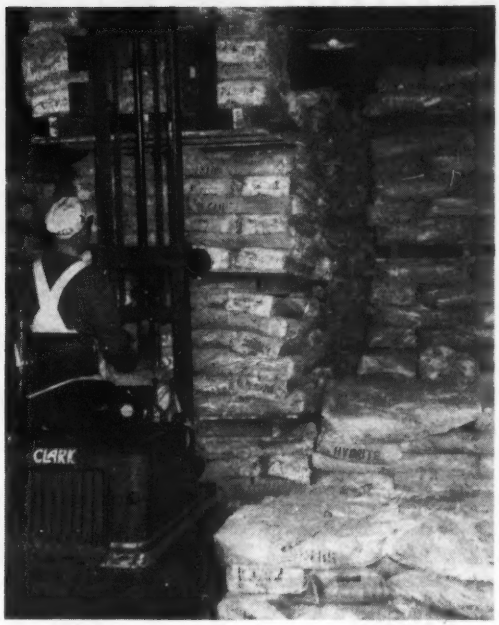
Increased Yard Utilization

The installation of a palletization program in Yard X has resulted in an increased yard capacity and a substantial reduction in the cost of handling drums.

Prior to the present method, the drums were rolled out to the yard and stored on their sides. Since the drums could not be stacked, the

NEW METHOD: Now hundreds of the bundles are unloaded, stored and delivered.

PALLET HANDLING resulted in greatly increased storage capacity per square foot.

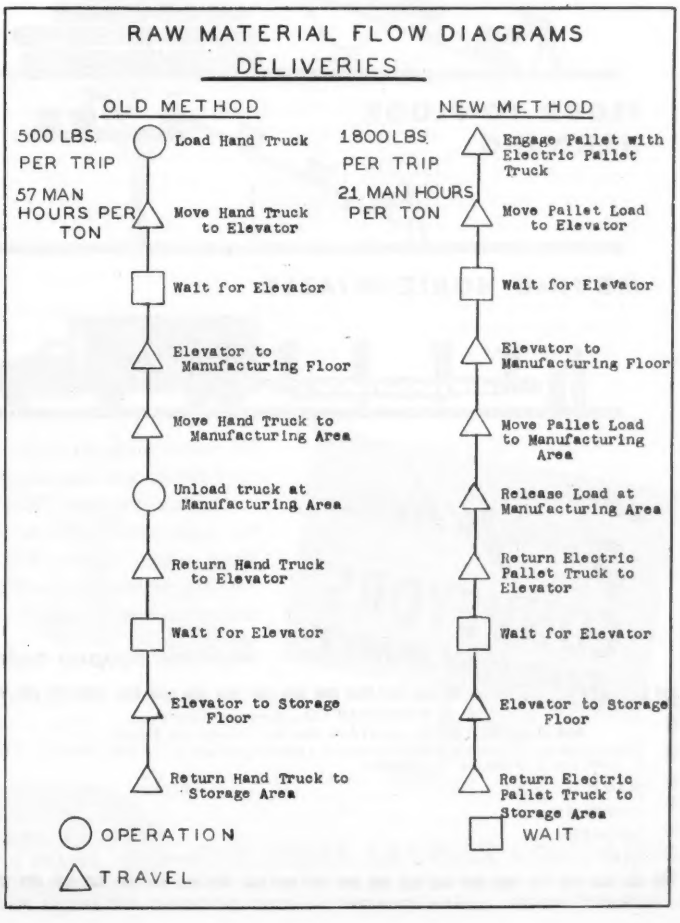


Bags and Drums

By J. J. HUDSON
Supervisor, Industrial Engineering Department
Sherwin-Williams Company, Chicago

capacity of the yard was about 125 to 150 drums.

When making shipments or transfers to the warehouse or factories, the drums were taken from the yard and rolled up a wooden skid into a truck or car. This operation was very hazardous, especially during the winter months and required a crew of three to five men. The loading operation was extremely difficult whenever it was necessary to double deck the drums in the trucks. There was considerable difficulty in segregating the drums so that various lots could be readily located when making shipment. Under these condi-

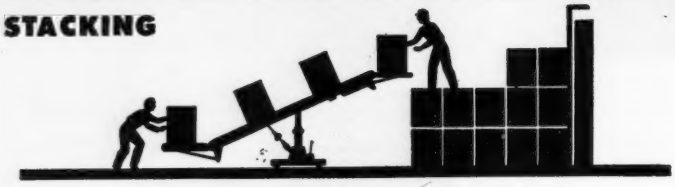

RAW MATERIAL FLOW DIAGRAMS
DELIVERIES
OLD METHOD
500 LBS. PER TRIP
57 MAN HOURS PER TON
Load Hand Truck
Move Hand Truck to Elevator
Wait for Elevator
Elevator to Manufacturing Floor
Move Hand Truck to Manufacturing Area
Unload truck at Manufacturing Area
Return Hand Truck to Elevator
Wait for Elevator
Elevator to Storage Floor
Return Hand Truck to Storage Area
NEW METHOD
1800 LBS. PER TRIP
21 MAN HOURS PER TON
Engage Pallet with Electric Pallet Truck
Move Pallet Load to Elevator
Wait for Elevator
Elevator to Manufacturing Floor
Move Pallet Load to Manufacturing Area
Release Load at Manufacturing Area
Return Electric Pallet Truck to Elevator
Wait for Elevator
Elevator to Storage Floor
Return Electric Pallet Truck to Storage Area
OPERATION
TRAVEL
WAIT

WHILE NUMBER OF moves is the same in the before and after methods in diagram at right, note tonnage increase per trip as well as the reduced time it took for delivering a ton of material. Also, consult the material flow diagram given in last month's article (page 32) on unloading.

Handle Packages?

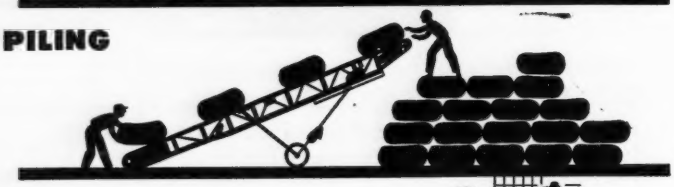
FARQUHAR CONVEYORS SAVE YOU MONEY

STACKING

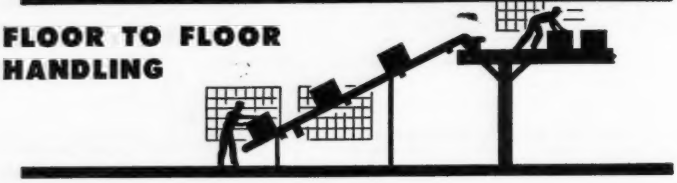


LOADING OR UNLOADING

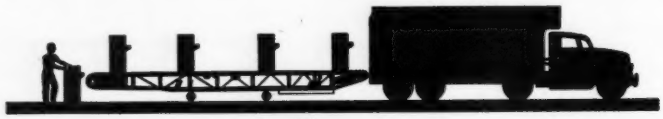
PILING



FLOOR TO FLOOR HANDLING



MOVING HORIZONTALLY



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tions the cost of loading drums was $0.15 each.

The time required to load trucks further aggravated the congested yard condition, as there were usually several trucks waiting for service at the same time.

Since the drums in the yard have been palletized, the number of drums which can be stored has been increased to over 800. The rubbish disposal station formerly located at the south end of the yard was also removed, increasing the yard capacity 20 to 25 percent.

The truck loading operations are now being handled by a two-man crew, the hazardous working condition is eliminated, and the loading time is reduced with a corresponding reduction in the delays of trucks waiting for service. The cost of loading drums by the new method is about $0.08 each, which is $0.07 less than the former cost. Approximately 5000 drums are handled each month at a saving of $4,200.00 per year. This amount excludes savings which cannot be readily determined such as:

1. The reduction of truck waiting time.
2. Increased storage capacity.
3. Reduction in the number of drums transferred to temporary storage areas.
4. Ability to handle enormous increases in production of seasonal items.
5. Correlation of materials handling methods and equipment with other manufacturing departments and the warehouse.
6. Use of equipment for miscellaneous operations.
7. Elimination of the hazardous loading operation.
8. Better housekeeping.

The above improvements would increase the known savings of $4,200.00 by 50% to 100%. The cost of this installation was $3,100.00. This amount does not include the cost of paving the yard which would have been necessary regardless of whether the new procedure was installed.

Shipments of Empty Cartons

The principle of unitized shipments has been applied to the handling of knocked-down shipping cartons. These are normally tied in bundles of 15 or 20 and the bundles manually unloaded from

cars or trucks to storage. They are later hand loaded onto four-wheel trucks and delivered to the packing departments. Bundles of cartons are usually very difficult to handle and require special care when in storage since the hand stacked bundles have a tendency to collapse. The average car requires 20 man hours to unload. The cost of handling cartons under this method amounted to $8,000.00 per year.

A study made of this operation indicated that cartons could be shipped in strapped bundles of 600 each. Several trial shipments were made and improvements in the loading technique brought about through these tests have made it possible for us to handle all inbound shipments in this manner. The bundles are unloaded from the car by fork lift trucks and placed on pallets for delivery to storage. The palletization of these items has simplified the storing procedure since the pallets prevent collapse of the stacks. The strapped units of cartons can be safely double or triple tiered and remain in position until removed for use in the packing department.

A savings of $2,500.00 per year is being made on these operations. No capital expenditure was necessary as the equipment purchased for handling bagged materials is used for unloading and storing the bundles of cartons.

Proposed Extension of Palletization Program

Deliveries of raw materials to Department Y are now made by manual means from storage to the point of use on the second floor of Building 510. The elevator located in the center of Building 510 has a 3′ x 5′ car with a 1000 lb. capacity. This elevator is inadequate even for hand trucking operation. The installation of a new elevator to accommodate either the present method or a palletization program cannot be justified from a monetary standpoint. Power driven equipment cannot be used in

*Enterprise Wheel & Car Corporation, Bristol, Virginia

... they're a "SNAP" with ROSS lift trucks

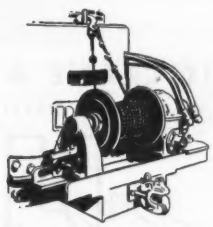
Big, bulky loads can cause increased handling costs. But at Enterprise Wheel & Car Corporation such costs have been greatly reduced by a ROSS Lift Truck. It handles raw materials in 5-ton loads . . . sub-assemblies and completed assemblies . . . loads out shipments. In addition, it efficiently augments the yard crane . . . Says Mr. F. A. Jones: "We find the ROSS exceptionally valuable in that we can now store shorter-length materials in our general storage yard. This releases space under the crane for the extremely long structurals and bars which the crane handles."

Investigate ROSS Lift Trucks (capacities 5,000 to 18,000 lbs.) for *your* plant . . . find out how they can become vital links in your materials-handling system . . . it will pay you.

ROSS CARRIERS . . . Speed transportation of long materials and unit-loads. Capacities, 10,000 to 30,000 lbs.

POWER-WINCH ATTACHMENT

Adds to versatility of ROSS Lift Trucks. Permits faster, easier spotting of railroad cars, moving of machinery, skidding of heavy loads. Fits all models.

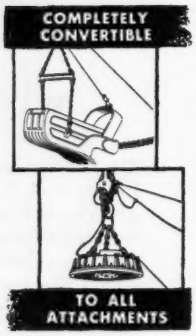


Rely On ROSS

THE ROSS CARRIER COMPANY
280 Miller Street, Benton Harbor, Michigan, U.S.A.
Direct Factory Branches and Distributors Throughout the World

This 50,000 pound Mobile Crane is a completely new member of the UNIT Crane and Shovel line. Designed for both "on and off" highway operation. So compact, it works efficiently even in small, cramped quarters, "in or out" of the yard.

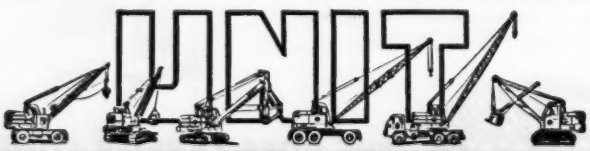
- Rugged Construction
- Perfectly Balanced
- Hook Roller Construction
- Operated by ONE Man
- Powered by ONE Engine
- Hydraulic Steering
- Air Brakes and 4 Speed Air-Actuated Transmission
- Heavy Duty, yet operated with remarkable SPEED . . . SAFETY . . . ECONOMY!



UNIT 1520 can be equipped with retractable high A-Frame to permit capacity loads on extended boom at long radius.

UNIT CRANE & SHOVEL CORPORATION

6531 W. BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.



SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHOES • MAGNETS

A 5413-2/3CA

Building 510 since this is a hazardous area.

To improve the material handling methods in Department Y, the following proposals have been made: 1. Install a new elevator of greater capacity, to be located outside the building wall. Palletized materials could be taken from storage and placed on the elevator by power driven equipment. Hand pallet trucks would be used for removing the pallet loads from the elevator to the point of use at the second-floor level. The cost of this installation would be approximately $25,000. 2. Use of a fork lift truck with a 16 ft. lift which could position pallet loads of raw materials on a platform at the second-floor level. The estimated cost of this installation would be:

Construction of platform and ramp	$1650
Special type fork lift truck	4000
Total	$5650

Because of the height of the mast of this lift truck, its use would be limited to outside areas. Raw materials would have to be taken from storage in Building 526 by other fork truck equipment and placed at the first floor level of Building 510. The unit loads would then be lifted to the second-floor platform by the special fork truck. Considerable caution would have to be used in the movement of palletized loads to the 16 ft. height.

Servicing of this lift truck would be difficult because the mast height would prevent it from being taken into the machine shop.

3. Construct the same type platform as in proposal Number 2. Install a mechanical lift directly below the second-floor platform. The deck of the lift would be built up to a height of 9 ft. and guide rails placed at each corner to stabilize the unit. Materials would be taken from storage by standard lift truck equipment and placed on the hydraulic lift at the 9 ft. level. The materials could be safely raised to the second floor and then deliv-

(Turn to page 47)

FROM THE S-A RECORD BOOK • *Another Example* • *Another Field* • *Another Bulk Material*

The Engineering Behind the Pushbutton—

Moves 8,000 bu./hr. with Minimum Effort

In any industry economical production depends upon how efficiently—and at what cost—bulk materials are moved and handled . . . the right volume to the right place at the right time.

You may not need to move a flowing river of wheat from railroad cars to skyscraper silos—as this mill does with a pushbutton-controlled S-A REDLER Conveyor System. But you *do* need bulk handling that meets *your* particular requirements at the lowest possible cost per ton. That calls for the most expertly planned handling system.

If your problems involve bulk handling, S-A engineers can help you find a practical, economical solution by combining many years of engineering experience with a *complete* line of conveyor units. Write us today . . . there is no obligation.

STEPHEN S-A DAMSON MFG. CO.

36 Ridgeway Avenue, Aurora, Illinois · Los Angeles, Calif. · Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

FLUID PRESS ROOM . . .
(Continued from page 17)

presses to the desired location, though a heavier crane is also available if the other one should be tied up.

Originally slings were rigged on the presses for transporting purposes. This required the attention of a millwright or other experienced riggers, which entailed some waiting time.

Later the idea was developed to equip the presses in such a manner that they could be handled by the crane operator without any assistance from other personnel. This was accomplished by attaching a bale to each of the miscellaneous punch presses.

However, this project was not without its difficulties. The reason was of course that each press had a different center of gravity, which was unknown. Morever, it was necessary to have an *adjustable* bale which would suspend the press during transport perpendicularly so that it could be spotted properly. If a press hangs at a 30-degree angle it is (obviously) likely to tip when set down. The point is emphasized that it must be suspended perfectly upright, otherwise readers might underestimate the work entailed in determining the correct center of gravity (in a front to back and left to right direction) of the presses.

After the adjustable rigging was attached, a great many experimental lifts were made and inaccuracies corrected, until the proper center of gravity on each press was determined. Most of the stock used for the bales was 1-1/8" or 1-1/4" rod, the channels, 4", 6" or 8", depending on the weight or length of a press. It can be seen from the photographs that the channels are arranged back-to-back, which provides the adjustment slot.

After the center of gravity was determined, the parts were usually tack welded in order to prevent slippage. Sometimes openings in the castings, or bar lugs, were utilized for attaching the rods. All presses were put on plates.

This procedure applies to about 60 presses. The smaller ones required less rigging. Frequently a single bar was sufficient for correct suspension.

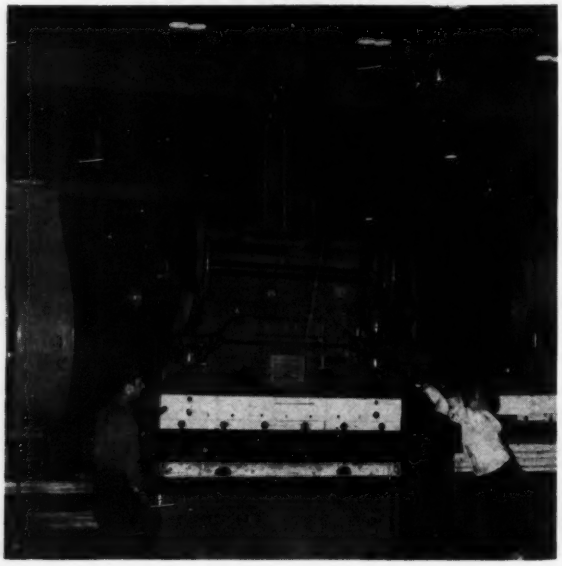
A Flexible Layout

The combination of presses depends of course on the number of operations required on a particular component part. Four or five of the smaller units may be grouped around one of the larger presses, or, by use of accordian type gravity roller conveyors, the work may be routed from one large press, bypassing an adjoining one, to a second large unit in that line. Still another combination consists of grouping a number of smaller presses around a brake (in the miscellaneous press area). Or a brake will be brought to a press setup in order to utilize the best material flow. While the large brakes are not equipped for portability, they are placed in such a position that the punch presses can be spotted around them.

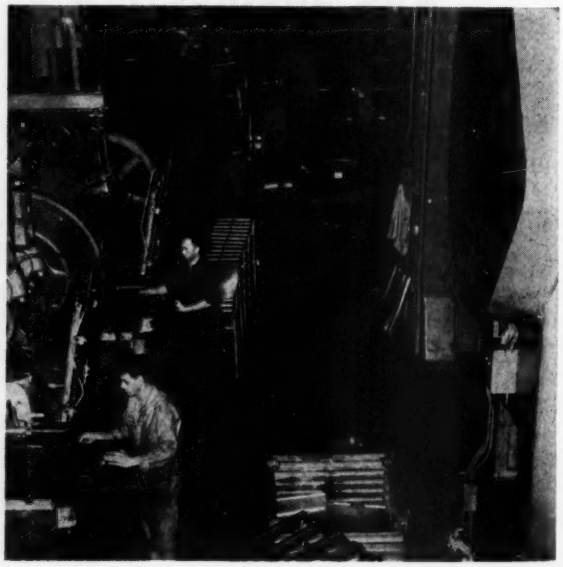
As can be seen from one of the exhibits, the integration of portable conveyor lines is an essential part of this operation. Suitable containers, equipped for on-the-floor or overhead handling, are likewise necessary tools that assure an efficient handling job.

By means of this flexible layout, a foreman can make a new set-up in as little as 15 minutes. This may entail the moving of four or five presses. The foreman gets the numbers of the presses indicated on the operation sheet, locates them, and then calls for the crane oper-

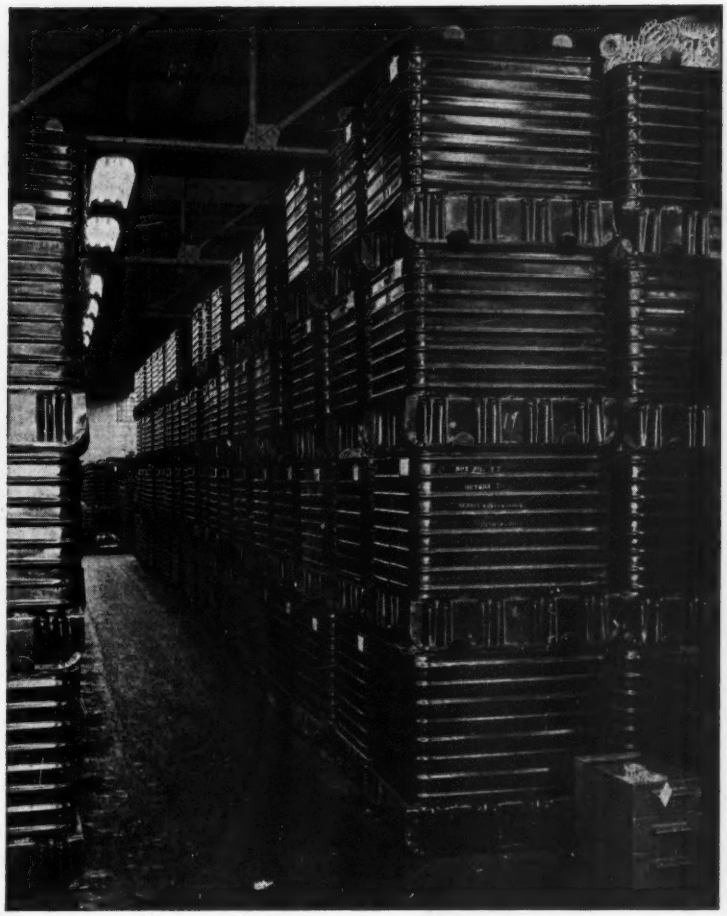
CRANE SPOTS press with single bale, which is sufficient on most of the smaller presses.



PROGRESSIVE SETUP in press pit, with portable conveyors. Large presses are at the right.



YOU CAN PINCH EVERY INCH OF STORAGE SPACE



with UNION METAL *Engineered* Materials Handling Equipment

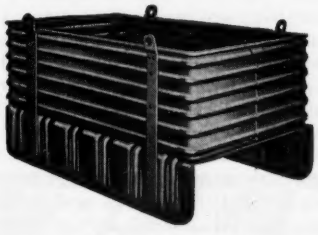
● Put your non-paying "overhead" on a *paying* basis—with Union Metal steel boxes, pallets, and corrugated skids.

The picture above shows a typical example of how these space-savers work. The Tiering Skid-Boxes are making use of valuable air rights, by efficiently stacking unit loads of parts ready for movement to production areas. Steel Tiering Skid-Boxes may be used equally well outdoors.

Union Metal materials handling units help reduce handling costs in *extra* ways:

They keep floor space clear for production needs . . . They increase production line efficiency . . . They move materials quickly, safely, in unit loads.

You make worth-while savings with Union Metal rugged, durable, corrugated skid platforms, boxes and pallets. They've proved it in hundreds of industrial plants—because they're *engineered* for their jobs. For complete information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

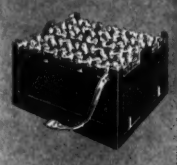


UNION METAL
Materials Handling Equipment

Handling Work is
STOP
and GO...
It's an intermittent service in which battery industrial trucks have many natural advantages. They start instantly, accelerate smoothly, operate quietly, give off no fumes, and consume no power during stops.
★
Battery trucks "deliver the goods" with double dependability when they are driven by EDISON Nickel - Iron - Alkaline Storage Batteries. With steel cell construction, an electrolyte which preserves steel, and a foolproof electrochemical principle of operation, they are the most durable, trouble-free and long-lived of all batteries.
★
If you do not already use EDISON, get a current price quotation . . . you will probably find initial cost *much lower than you think*; annual operating cost *less than you pay now!*

ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES: They're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle.

EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES

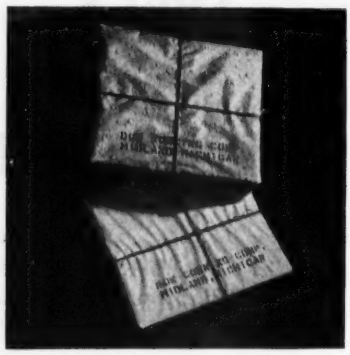


EDISON STORAGE BATTERY DIVISION
of Thomas A. Edison, Incorporated, West Orange, N. J.
In Canada: International Equipment Co., Ltd., Montreal and Toronto

ator to move the equipment to the desired location. If a certain press is not available for a given set-up, the foreman is frequently able to use an equivalent press.

This fluid layout, in conjunction with the large presses in the basement type pit, gave the flexibility necessary to achieve the goal of progressive operations with a minimum of inter-operational handling. This arrangement has contributed importantly to control of production, quality and cost in the new Carrier punch press department.

A WATER REPELLENT AND NONADHESIVE SURFACE PAPER —Paper properly treated with DC 1107, becomes extremely water repellent and nonadhesive to rubber, asphalt, pressure sensitive tapes and to most adhesive materials. These properties are imparted to paper without any apparent change in texture or color and without altering such physical properties as tensile strength, tear resistance or moisture vapor transmission. The high order of water repellency characteristic of DC 1107 treated paper prevents initial wetting and greatly retards the subsequent rate of wetting. Consequently, paper so treated retains its tensile strength and tear resistance for a relatively long period of time in contact with water. This property suggests the use of the product as a water repellent treatment for paper rain wear and for special purpose bags and wrapping papers. The release characteristics imparted suggest the use of such silicone treated paper as interleaving sheets for uncured rubber stock, camelback, tire tube repair patches and pressure sensitive rubber tape. The product may also be applicable as interleaving strips for adhesive and friction tapes, and as shipping bags for materials such as asphalt. —**Courtesy, Dow Corning Corp.**



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get the MOST out of *Every Man-Hour* with the BELT Model "S" Handy-Handler Conveyor

Weighs only 119 lbs., (16 ft. length with 2 HP gasoline engine)

Don't waste high-priced labor performing tasks the Handy-Handler can do faster and more economically. In the shipping room, in the warehouse, along the production line, this lightweight conveyor will step up loading, unloading of bulk materials and other handling jobs.

High-strength, rust-proof, aluminum-alloy construction throughout. Compares with steel in withstanding wear and abrasive action. May be easily positioned and operated by one man.

Available in 16-ft. length or with 4-ft. mid-section to increase to 20-ft. length. Mid-section may be quickly inserted when desired. Steel flights and chain or rubber flights and continuous rubber belt. Choice of standard or totally enclosed motor, or three gasoline engines.

Model M, a lighter, less expensive conveyor than Model S, has similar features—weighs only 100 lbs.

Investigate possibilities in your own plant. This versatile equipment will pay for itself in no time. You'll be amazed at what it will do. Write for full details and literature.

Less Power Unit and Power Unit Drive.....$199.00
With 1½ HP Briggs & Stratton or Continental Engine $256.50
All Prices — fob, Orient, Ohio

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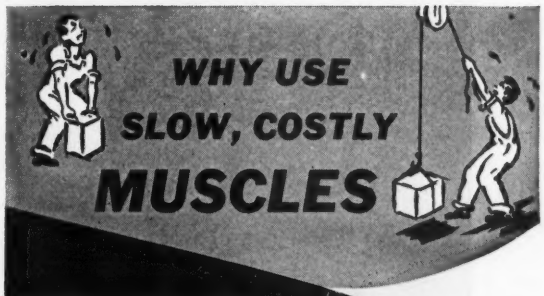

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WHITING ELECTRIC HOIST
IS ONLY...

$168.00 AND UP
F.O.B. HARVEY, ILLINOIS

You can lift heavy loads 13 times as fast with a Whiting electric hoist as you can with a hand hoist. Skilled workers and expensive machines can be released for productive work, and usually, the Whiting hoist will pay for itself in a very few months.

Workers are enthusiastic about Whiting hoists, too, as they eliminate the danger of rupture and strained muscles.

Whiting hoists have a unique, double worm-gear drive that provides smooth, silent power and makes possible amazing simplicity. They will last longer because they have fewer wearing parts than any electric chain hoist.

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Builders of Cranes, Monorail Systems and ELECTRIC HOISTS

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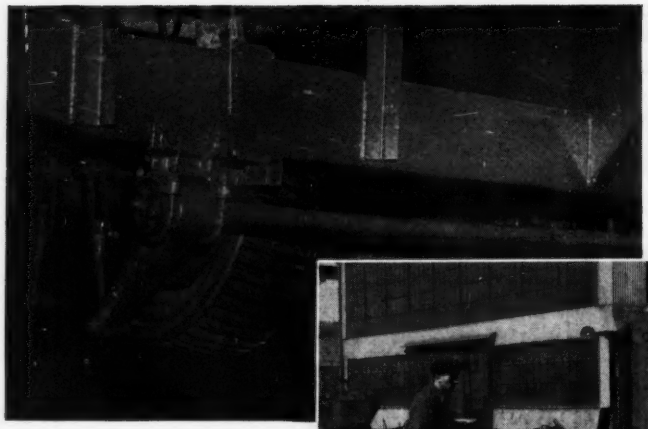
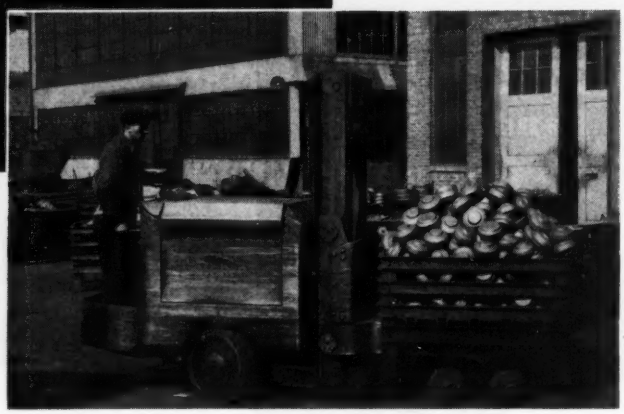


◀ **EXPERIMENTAL INSTALLATION** of Eddy Current Brake (left). Further experiments are being made on it in regard to its future use.



THIS FORK TRUCK is engaged in heavy forge shop work. Such trucks often require special linings on account of the performance desired.

Brake Liners and Clutch Facings in the Material Handling Field

"The use of correct types of friction materials is extremely important inasmuch as their performance invariably affects the over-all performance of powered material handling equipment." All friction materials are divided into two primary classifications. 1. Brake liners. 2. Clutch facings. These are also frequently referred to as brake frictions and clutch frictions. This definition is largely a matter of application.—The first of three articles on the vital role of brake liners and clutch facings in the material handling field.

By H. W. OVERMAN
Brake Specialist, Philadelphia

A BRAKE is used for the purpose of arresting motion, a clutch to transmit motion. In either case the power is absorbed through pressure applied from one surface at rest to one surface in motion.

Heat is created which must be absorbed and dissipated. Usually one of these elements is a heat resisting body with a uniform friction value and reasonable wear life. The most popular construction is an asbestos base, impregnated liner opposed to cast iron or steel.

Design Factors Influence Performance

The use of friction materials (both brake liners and clutch facings) is very extensive in the material handling equipment field. One of the paramount facts to be remembered in dealing with these items is that almost without exception there is either a clutch or a brake, or both, on practically every piece of moving equipment. This is almost invariably true on powered units of all types.

THIS TYPE OF MOUNTED CRANE averages eight different friction material installations for optimum performance on the job.

PART I.

The use of correct types of friction materials is extremely important inasmuch as their performance invariably affects the over-all performance of the equipment involved and, consequently, they also affect its value, cost of operation, and maintenance.

Manufacturers of friction materials, together with the builders of material handling equipment, spend much time and much money in carrying on extensive test programs to determine those friction materials best suited to their own individual requirements. It must be realized that while the basic function of brakes and clutches remains the same, there are many other factors of design that influence final performance characteristics.

It would be well to note that basically we have three distinctly different types of friction materials: woven, molded and bi-metallic, with many variations of each basic type. From this you can readily see that it is no easy matter to determine the material best suited to any one unit. No rule of thumb method can be followed.

Combination of Desirable Factors

The actual function of a piece of friction material, either in a clutch or brake, is, as previously mentioned, to transform energy into heat and then to dissipate this heat. A severe operation such as with a shovel, crane, earth mover or kindred unit often makes it necessary to work with temperatures considerably in excess of those associated with normal operations. This calls for highly complicated treatment and compounding on the part of friction material manufacturers to meet such conditions and still give good performance and long life. Many times some sacrifice must be granted on one or more points to accomplish the desired over-all results.

Such facts as these make it essential that each manufacturer of material handling equipment, together with the friction material manufacturer, attempt to determine an average and desirable combination of factors. Such factors will include initial cost, ease of installation, performance and life. Following such an understanding, those materials should be used as standard which approach closest to these desired figures. Ultimate end of the finished product must also receive careful thought and study; consequently, all these facts result in definite recommendations for the finished unit as to capacity and ability. Of course, components of the unit other than friction materials are similarly treated. This makes it of paramount importance not to overload any unit beyond that recommended by the manufacturer and not to use any unit for work it is not designed to handle.

All too often we look upon friction materials as "just a piece of brake lining," without realizing its actual function and importance to the satisfactory and continued performance of our equipment. We fail to realize the extensive engineering and development work being carried on constantly to improve its life and performance.

Maintenance Aspects

In practically all installations the friction materials are so located that they are subjected to weather, dirt, oil, grease, and other foreign matter which will, in a very short space of time, greatly reduce their efficiency. An occasional or preferably periodical inspection of the friction materials is well worth while.

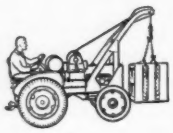
Brake lining should not be washed with gasoline. Grease or oil soaked lining should be replaced, as it is impossible to remove all the grease. Gasoline or any other solvents have a tendency to make the grease or oil penetrate further into the lining. When lining heats up from use, oil or grease is again brought to the surface and results in an unstable friction, causing either a grab or slippage.

Preventative maintenance will

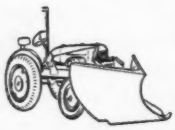
ONE UNIT...MANY JOBS...LOW COST

The All 'Round Allis-Chalmers IB Tractor

Here is a tractor built low, fast and powerful — for speeding up handling and maintenance jobs. Highly maneuverable — only 8 feet long, 4½ feet wide, turns in a 7 foot radius. Has 14-inch ground clearance . . . unusual stability — travels over railroad tracks, rough planking, up steep ramps . . . speeds up to 10 m.p.h. Service facilities are nation-wide.



Available with a variety of attachments that greatly broadens its usefulness.



CRANE JOBS — A utility lifter for industrial plants, on docks and loading platforms . . . wherever loads are lifted, moved and spotted. Handles up to 1500 lbs. Choice of 8, 10 and 12 ft. boom heights.

SNOWPLOW — Keeps driveways, docks, platforms open for year 'round business. Two models, the "V" and tripping blade snowplows.

SWEEPER — Keeps railroad platforms, bridges, warehouses and other high-traffic surfaces clean — 56-inch sweeping path.

WINCH — Performs many pulling, hoisting and skidding jobs that normally would require heavier, more expensive equipment.

• *Allis-Chalmers builds a wide line of wheel and crawler tractors for material handling of all kinds — loading, carrying, pulling.*

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Please send copy of bulletin "Allis-Chalmers IB Industrial Tractor" giving complete information about this compact, economical unit. Also, send literature on Crane....., Sweeper....., Snowplow....., Winch....., Tracto-Loader....., Other Equipment (specify):

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NEW METHODS OF MATERIALS HANDLING may reduce your Cost substantially. Further information without obligation.

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greatly increase the life of the friction material and help to maintain satisfactory performance of the entire unit throughout its life. This type of care also reduces the possibilities of drum scoring and subsequent high replacement costs.

The facts mentioned so far point to one very obvious conclusion. When it is necessary to consider replacement of friction materials it is well to consult both with the engineer responsible for the design of the original unit, or, if the unit is subjected to unusually severe or different operation than the one for which it was originally designed, seek the advice of an engineer from a reliable friction material manufacturer. Do not, in any case, just buy a "piece of brake lining" because it is the right size. Such practice results in anything but satisfactory performance. Do not become confused to the extent that you feel that one type of friction material will take care of any and all requirements.

Modern Materials Highly Developed

Let us take a look at the three types of friction materials mentioned earlier.

Woven lining as used today is a far cry from the original woven materials used many years ago. Today they, undoubtedly, represent the most highly refined and most difficult to produce in the friction material field. Combinations of materials such as asbestos fibers, cotton and alloy wire are introduced at the time of carding or spinning

to give definite characteristics. The number of wraps per inch in the finished yarn receives careful attention. Weaving of yarn into tape has been greatly improved. Extensive experimentation has resulted in the development of phenol resinous compounds that have been highly successful under the most severe operating conditions. Impregnation of tape with these compounds both by vacuum methods and open air immersion have been perfected, and graduated baking cycles thoroughly explored and finally adopted. All in all, present-day woven friction materials are the most expensive to produce, withstand terrific temperatures and when properly used give excellent results.

"Woven lining is made in two distinct types—woven and woven and molded. Woven and molded is a multiple-ply folded and compressed type of lining fabricated from a base of open weave, wire reinforced cloth, impregnated to eliminate water sensitivity and ground on both sides. It is cured at high temperatures and under extremely high pressure."

Molded liners were a development brought about by the original introduction of hydraulic brakes, for which a material was required to work under heretofore unthought of pressures. Many refinements have since been incorporated which resulted in two basic types—extruded and dry mix. Both of these types have a definite place. Modification of compounds for each type can be made quickly and easily to change the final characteristics.

These materials, originally designed for a specific purpose, have now been highly refined and are, therefore, suitable for many and varied installations. When these materials are used in the correct installation, end results are completely satisfactory.

Bi-metallic or fused metal friction materials are a comparatively new field. Here powdered metals are formed under pressure and fused together in various combina-

Materials HANDLING EQUIPMENT
CUSTOM BUILT TO MEET YOUR NEEDS

SHOVEL TRUCK
Item B-339 B
$27.50
Metal Wheels

Item B-339 C
$32.50
Rubber Tire Wheels

For pick-up and moving heavy barrels, drums, bags, pans, crates, hampers or cases. 48" high; weight approximately 50 lbs.

Item B-488 R
Rubber tired wheels
$42.00

Item B-488 M
Metal Wheels
$38.00

CARBOY TRUCK
Gripping Yoke loads automatically. Steel studs on truck grip the load—no slipping—all steel, welded construction.

Item NS-364 — 3 ton $150
Item B-704 — 5 ton $225

SHEET STEEL GRAB
Handles sheet steel bundles, any size 0" to 9" thick, 18" to 48" wide and any length.

Item B-746

CORRUGATED BOX with legs
For moving or storing heavy metal parts; built of heavy corrugated steel; angle iron reinforced. Size and load capacity to suit.

Combination TRUCK and DRAIN RACK
Loads Automatically

A dual purpose truck that can be used to move barrels or drums and also serve as a drain rack. Available in two styles—with or without detachable handles. Sturdy frame-welded construction. Weight approximately 90 lbs.

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Drum and Barrel Sling

Handles barrels, drums, kegs—anything with a lip. Half ton capacity. Heavy welded chain and forged grab hooks. Wt. 8½ lbs.

Gear type dumping rockers.
Automatic coupler at rear.

Side Dump TRAILER TRUCK
Heavy gauge reinforced steel body, mounted on substantial structural steel framework. Sturdy pull bar 30" long—all welded construction. Four 18" by 3½" metal roller bearing wheels, with moulded on rubber tires.
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Speeds handling. Of heavy bar stock, well reinforced, tubular handles, welded construction. Two 10" roller bearing metal wheels.
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We design and build all types of materials handling equipment . . . for pick-up, loading, moving, dumping or storage . . . made of metal, or wood, or combination.

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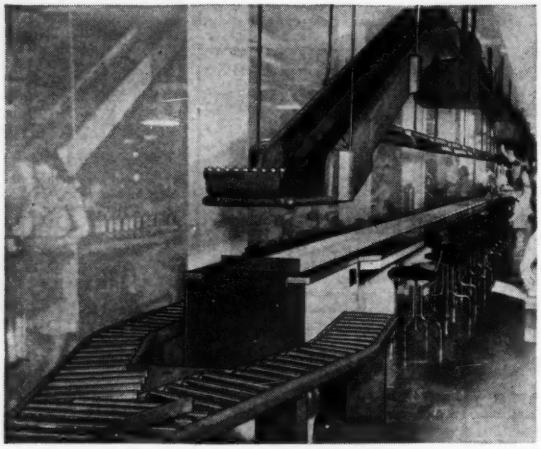

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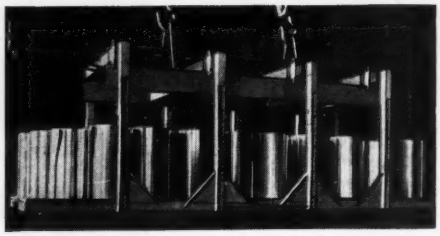

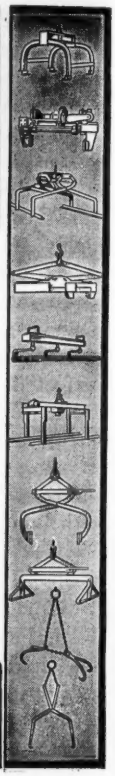

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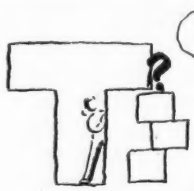

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* With apologies to you know who

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Fairfield, Connecticut

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1RG50

tions either into a solid liner form, sometimes having a full metal back, or fused directly to a shoe or clutch plate. By varying the combinations of powdered metals to be fused, various end characteristics can be obtained. This type of material has a comparatively low coefficient of friction, thus requiring higher operating pressures to obtain desired performance. The liner thus constructed, however, is extremely porous, giving it a fine water recovery factor and making it a very desirable material where pressures can be maintained and where the entire component unit, such as a steering clutch, operates in oil. Unusually long life is obtained, though original cost is considerably greater.

New Braking Methods Being Studied

The use of such material requires close study by qualified engineers if best results are to be obtained. Considerable advances being made in the field of powdered metallurgy will definitely affect the future of this type of friction material.

In summary, here are some considerations as to future developments. Extensive studies have been, and are still, being made in the use of the fluid drive principle. In most cases this does not entirely eliminate, by any means, the use of friction materials but has changed the location and application of these materials.

Finally, we should mention the interest being show in the Eddy Current type of brakes and clutches. They are fundamentally a simplified form of electric generator. When excited, it produces a braking effect by generating electric current which is converted into heat and dissipated by cooling fins mounted on the rotor—like trying to turn an electric motor in reverse when the power is on. Of course, this action is generally for retarding motion only and conventional equipment must be used to complete the operating cycle.

More will be heard about these last two items as engineering staffs delve further into their possibilities.

Paper Reinforced With Steel Strapping

A STEEL reinforced paper specialty now being made consists of a series of steel straps laminated between two plies of asphalted kraft. This product is the result of a long-range modernization program in the asphalt papers division of the Thilmany Pulp and Paper Co., Kaukauna, Wis. The most widely used application of the patented item, the end-use product of a new machine, is for grain retaining doors.

The production of the steel reinforced material—a combination of asphalt, paper and steel—is accomplished with a specially built machine in a continuous operation. It prints identifying and descriptive information on the outer layer of kraft, applies a double coating of asphalt to the kraft plies, inserts the steel strapping at regulated intervals, and laminates them into a single unit.

The purpose of the double coating process is to provide a perfect bond and eliminate any voids caused by bubbles or other imperfections. A synchronized sheeter automatically cuts the steel reinforced paper to desired dimensions and stacks the sheets on skids for crating. A special device was developed for the mechanical handling of the 4000 lb. bundles, which simplifies the loading operation.

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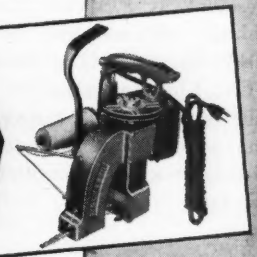

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ON THE PALLET

NEWS • VIEWS • TRENDS

THE American Material Handling Society announces its disaffiliation from the Material Handling Institute by the adoption of a new by-law which amends the paragraph in its constitution providing executive board membership for selected non-voting Material Handling Institute members. The Society also announces the selection of Modern Materials Handling magazine as its official organ, and that this magazine each month will devote eight of its editorial pages exclusively to the chapter activities of the Society. The Society made known recently that it has nine chapters with a total membership of about 1000. Approximately half of these are user members, and half are supplier salesmen and others connected with the equipment business.

Widespread student affiliations were said by A. K. Strong, Society President, to be among the first business of the American Material Handling Society. It was pointed out that another early objective would be to reclassify the membership of salesmen of equipment.

R. C. SELL, general traffic manager of the Koehring Co., has been elected president of the Society of Industrial Packaging and Materials Handling Engineers for 1950 and 1951. Sell has been a vice president of the national society for the past two years. Other newly elected S.I.P.M.H.E. officers include Paul O. Vogt, General Electric Co., Schenectady, N. Y., who was elevated to the newly created post of vice chairman of the board. Vogt just concluded his second year as the Society's president. R. F. Weber, International Harvester Co., Chicago, was re-elected as chairman of the board. Other officers include Stanley Price, Western Electric Co., Chicago, executive vice-president; and W. Gorden Bennett, J. H. Singer, and Gale C. Cunningham as regional vice presidents. J. L. Ware was retained as the Society's treasurer and H. E. Brill is the new secretary.

FIFTEEN hundred midwestern industrial and railroad executives attended the special opening program of the new Chicago regional material handling sales and service headquarters established by the Yale & Towne Mfg. Co. The facility is in a new two-story building at 815 N. LaSalle St., Chicago. The occasion also served to introduce a series of new Yale hydraulically operated devices applied to standard industrial trucks. A staff of 33 factory-trained persons under the direction of Arthur H. Dobler, regional manager, handles sales engineering, repair, maintenance and spare parts services. Roy L. Wolter is regional sales manager of industrial trucks and scales; Floyd A. Dewey is regional manager of hoists; Earl S. Thulin, manager of the railroad department; and Richard A. Rieger, manager of the repair and spare parts service departments.

Yale & Towne has also opened a Syracuse sales and service depot, managed by H. R. Bungay, Jr. The new quarters will carry a full line of spare parts and completed models. Bungay will be assisted by a staff of six.

ENOCH J. BARTLETT, one of the pioneers of the material handling industry, was honored recently at a testimonial luncheon given in Cleveland by members of the Electric Industrial Truck Association. Bartlett, a past-president of the association, is president-emeritus and a director of The Baker-Raulang Co. He became vice president and one of four directors of E.I.T.A. in 1928, when 14 companies joined to form the association in order to improve the cooperation of makers of industrial trucks and their auxiliary equipment. He became assistant manager of The Baker-Raulang Co. at its founding in 1915, was promoted to vice president and general manager in 1919 and president six years later. He retired as president and became president-emeritus of Baker-Raulang in 1948.

CHARLES S. TRAER, chairman of the board of Acme Steel Co., passed away recently. Traer had just completed 30 years of active service with the company, having started with them as works manager in 1919. He subsequently served as treasurer and works manager—1922-1935; vice president and manager of production—1935-1941; and president—1941-1948. He had been chairman of the board since 1948.

ATTENDANCE figures recently compiled indicate over 4000 persons registered at the 4th Annual Industrial Packaging and Materials Handling Exposition, held in Detroit's Convention Hall, October 4-

(Turn to page 54)

MEN IN THE NEWS

CARL J. SHARP, president, has announced that the board of directors of Acme Steel Co., has elected Chester M. MacChesney as chairman, a vacancy caused by the death of Charles S. Traer. MacChesney became associated with Acme in 1916 as a design engineer, and later held positions as head of the engineering department and superintendent of the Archer Avenue plant. In 1923 he was elected to the board of directors and in 1949 appointed executive vice president.

C. M. MacChesney

EDWIN M. PERRIN, formerly advertising manager of Robins Conveyors Division of Hewitt-Robins, has been appointed advertising manager of Hewitt-Robins Inc., according to B. T. Moffatt, vice president in charge of sales. Perrin will coordinate the advertising of the four divisions: Robins Engineers, Robins Conveyors, Hewitt Restfoam, and Hewitt Rubber. He joined the organization in 1942.

E. M. Perrin

WILLIAM H. KILKENNY, west coast material handling engineer, is the new general manager of the Hyster Co. southern California retail store, 5301 Pacific Building, Huntington Park. This was announced by Ray Ronald, western division sales manager. Kilkenny, as a lieutenant commander, specialized for four years in naval material handling programs. He has since been engaged as a material handling field consultant and in sales administrative work for Hyster, and has planned many of the large industrial installations on the west coast.

THE stockholders of Manning, Maxwell & Moore, Inc., have appointed seven new directors, thus increasing the membership of the board to thirteen. The new members are C. A. Moore, III, H. S. Moore, C. M. Chester, III, E. M. Moore, J. R. Kelley, J. E. Minty, and H. Merrill.

GERLINGER Carrier Co., through J. W. Kitzmiller, vice-president in charge of sales, has announced the appointment of George C. Lichty as assistant sales manager. Lichty has been associated with Gerlinger in recent years as a factory representative. In his new position he will work under Kitzmiller in the sales management of Gerlinger lift trucks and materials carriers.

9 out of 10 companies can save on shipping with

ACME STEELSTRAP

45,000 users have proved it . . .

Timken Roller Bearings are boxed neatly, securely, and economically—with Acme Steelstrap!

How Timken cut packaging time!

Yes, this company cut packaging time when they set up a packaging production line using Acme Steelstrap and Acme equipment.

But that's not all. The appearance of the package was improved and it was made stronger and easier to handle in pallet lots. The expense of dunnage was reduced!

If you box, bundle, crate or bale your product, you, too, should be able to make important savings with Acme Steelstrap and Unit-Load Band. Ask an Acme Shipping Specialist to make a free analysis of your packaging and shipping operations. Or ask for free booklet, "Savings in Shipping." Mail the coupon today!

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FLOW FOR OLD BUILDINGS . . .
(Continued from page 19)

of the plant, it is hemmed in by other buildings, which in turn hampers the maneuverability of inbound and outbound trucks. The small yard was once adequate for the smaller highway vehicles of some years ago, when the volume was also smaller.

Receivals consist largely of bar and sheet stock, corrugated carton flats, castings and miscellaneous small piece parts. Reference to the old layout shows that there were four storage areas for incoming materials, indentified by the symbols A, B, C and D.

From these points the materials were routed to four machining and fabricating locations (1, 2, 3 and 4). Part of these several locations is explained by the diversified lines produced and the volume growth which took place over the years. Certain materials were moved to upper floors in the normal processing cycle. (Two-thirds of the buildings are three stories high.)

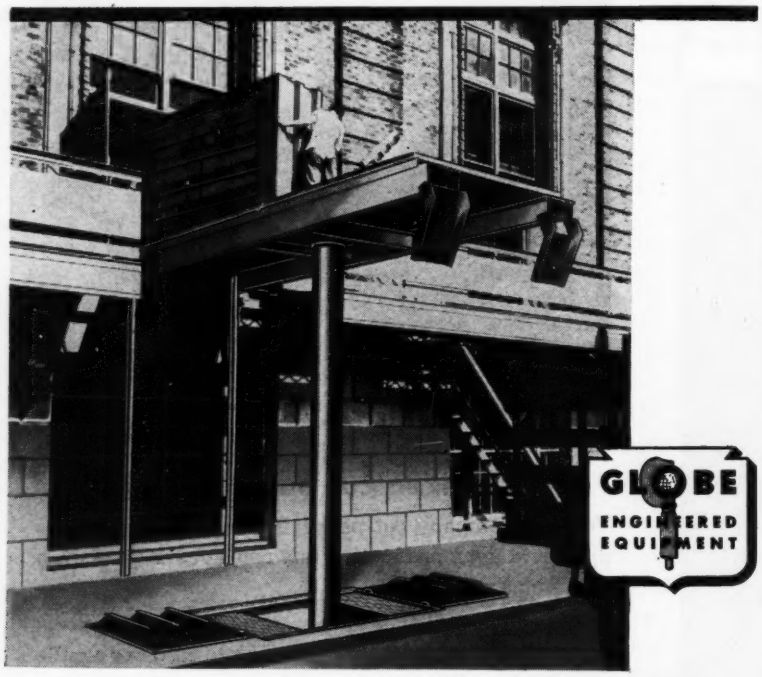
The symbols 5, 6, 7 and 8 show four finishing areas, one located on an upper floor, while 9, 10, 11 and 12 indicate finished parts stores,

SKID LOAD WITH nesting sections gives large capacity for small parts transportation. Power trucks were early used by Taylor.

two of which are on the second floor. The scattered and duplicated operations and locations inevitably involved a considerable amount of roundabout in-plant traffic, back tracking and confusion—a problem familiar to production engineers and executives even in newer plant structures than ours.

Quantity-Handling Methods Early Used

Despite the limitations of the layout, our company even before the war introduced various modern types of material handling equipment. Platform lift trucks were operated in conjunction with skids which could be built up by means of nesting sections. This equipment was employed only on the first floor because upper floor load limits would not permit heavy-duty trucks. On the upper floors extensive use was made of hydraulic hand lift trucks, and wooden cabinet type hand trucks with cleats for the insertion of trays. Thus, years ago, small-quantity items were combined into fairly large load units for pickup and delivery on scheduled runs through machining, processing and assembly departments. At the present time we are considering the use of riding type hand electric trucks on the first and second floors. In addition, conveyors have been used very successfully in the wrapping, shipping



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Cut materials handling time in half with Globe's Wall Climber. Moves goods directly from street to second floor, quickly, safely. Avoids long, inside routes. Eliminates plant congestion. Hydraulic cylinder or chain hoist lifting power. Push button controls. Send coupon below for Bulletin F150, giving pictures and full details.

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and final stores departments, as well as other specialized locations (such as our light assembly department) where the volume of a certain product warranted.

The Long-Range Goal

Against this background, the significance of the 25-year plan can be appreciated. The breakdown, mentioned earlier, was designed to include immediate projects as well as intermediate steps to be realized at intervals of five and ten years, and so on. The new arrangement contemplates the addition of considerable new floor space. The amount of this expansion was obtained by studying past growth curves and projecting into the future; also, by taking into account the present crowded condition of certain departments, and the possible extra expansion of other departments because of expected technological changes. The plan also allows for the possible contraction of some functions.

In the block type "proposed" layout the main advantages can be followed readily. The key to the entire project is a grouping of functions for progressive movement of materials, the whole tied in by a system of express aisles for the rapid transfer of loads in conjunction with power handling.

The new receiving department is shown relocated so that it will be removed from the hemmed in condition. It will face directly on a dead-end street at the west side of the plant, and that means an absence of traffic difficulties.

The material flow from this point on will be U-shaped with general service departments located near the center. Storage for incoming materials is to be located directly to the east, which will decrease in-plant traffic. Note that machining and miscellaneous processing are directly adjacent to the east of this general area. This means that material will advance progressively, with backtracking virtually eliminated.

The machining departments, in turn, will be grouped around the tool crib, tool grinding and a centrally located degreasing station. This area will also include welding and heat treating equipment. Thus progressive flow for the bulk of in-process parts will be provided.

Traffic Plan Ties in Functions

The finishing departments exemplify the same grouping by functions as do the other departments. The arrangement of painting, buffing and plating areas is planned to give a sequence for minimum travel of in-process parts.

As the rearrangement progresses we will attempt to make nine-foot main or express aisles for the fast movement of loads by power trucks. While three main aisles will form the U-shaped traffic artery, two cross aisles will be added to facilitate the return run. The main cross aisles will also make possible shorter runs in inter-departmental travel. Looked at from the viewpoint of the over-all design, the

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Designed for carrying light loads within a confined space, Richards-Wilcox ZIG-ZAG OveR-Way continuous power conveyors are serving production and processing lines in every imaginable industry—increasing efficiency, cutting costs. If you have perplexing handling problems to solve, call or write the nearest office of Richards-Wilcox . . . world's largest makers of power conveyors and door hardware . . . for free literature.

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3 Styles Solve Any Overhead Handling Problem

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Richards-Wilcox Tru-Tred and Steel Beam OveR-Way for heavy loads up to 8,000 pounds.

2
Richards-Wilcox Tubular Trolley Track OveR-Way for medium loads up to 3,000 pounds.

3
Richards-Wilcox Zig-Zag Powered Chain OveR-Way for light loads to be conveyed through degreasing, finishing, baking and other processes facilitated by meandering conveyor track with power operated enclosed chain.

Richards-Wilcox Mfg. Co.
AURORA, ILLINOIS, U.S.A.

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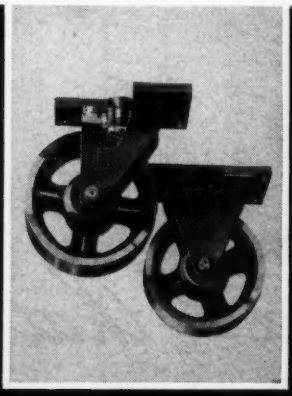
OVER 70 YEARS

main aisle system constitutes a square of traffic which corresponds to the square shape of the plant. While intra-departmental aisles will be six feet wide because of column strictures, they will be widened where possible to seven feet, whenever this is justified by the volume of traffic.

The main express aisles will integrate all buildings which are separated by alleys and courts. Roofed over driveways at building entrances are designed to keep the snow and rain off the pavement and truck operators. The entrances may be equipped with air-operated doors, the switches for which will be so located that they can be operated by the truck operators without demounting from the vehicles.

After finishing, the last point mentioned preceding the aisle layout, industrial parts will advance to finished parts storage on the first floor. Light commercial parts will be routed to the third floor of a new building, directly over the light assembly department located on the second floor. These parts will be fed by conveyor. All items designated for stock after assembly will go to a finished products department located on the second floor just beyond the light assembly department and partly over the shipping department. A conveyor will carry finished industrial stock to the department directly above. Thus, stock can flow down into the shipping department by gravity as needed. The rest of the products designated for immediate shipment will flow from the assembly departments to shipping, by-passing finished products storage.



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Important Gains to Be Realized

The master plan leaves considerable latitude for changes as smaller phases are gradually being translated into fact. Since the project was inaugurated only two years ago, no one should mistakenly assume that any large segment of it has already been completed. Work is proceeding slowly; current production is not disturbed.

As one of the first steps in the over-all strategy, we have completed some new building comprising about 20,000 sq. ft. This is the starting point for the relocation or regrouping program. When this and other steps have been completed, room will be left elsewhere to continue the rearrangement progressively in other parts of the plant.

Here is how our management and engineering group view the advantages of the long-range approach. 1. The cost of the project can be written off over a period of years (and the investment will not be a small one). 2. Reduction of in-plant travel as a result of the elimination of backtracking, which is both a saving in time and production cost. 3. The grouping of similar functions in one area is also going to improve efficiency because of better supervision and better control of scheduling. 4. Improved control and records of parts. 5. A sub-

stantial decrease in the volume of in-process stock, because of decreased time in transit from one department to the next. 6. Service departments placed in more strategic locations. 7. Wood product and shipping box manufacture brought close to the shipping deparment and railroad siding, where the lumber is received, and close to where the lumber will eventually be stored; thus centralizing this whole operation and greatly reducing handling.

As was intimated earlier, the project is progressing at a conservative pace. The big point is that we have a plan—a guide and a goal.

PALLET PROGRAM FOR BAGS AND DRUMS . . .

(Continued from page 30)

ered to the point of usage by hand pallet truck. The estimated cost of this installation would be:

Construction of platform and ramp $1650

Installation of mechanical lift 2500

Total $4150

Based on the above comparisons, proposal Number 3 is the most practical solution.

Load Unit Shipments of Bagged Materials

A survey has been made of various methods of making unit load shipments of raw materials and finished goods. Consideration was given to the use of returnable pallets and skids or expendable paper pallets.

The analysis made of the shipping methods indicated that it would not be economical to make shipments on returnable pallets because of the additional freight costs due to the weight of the pallets which is approximately 60 to 100 lb. each.

The survey has shown that the most practical method of making unitized shipments of such items as bags of raw materials and cartons of finished goods would be by the use of lightweight expendable pallets. At the present time the cost of the paper pallets cannot be justified for shipment of our type bag materials unless:

1. The cost of the pallets is reduced
2. The cost is shared by the shipper
3. Reduction can be obtained in the freight rates when shipments are made in unitloads.

The expendable paper pallets cost approximately $1.00 each and the average load is about 2000 pounds; therefore, if a rate reduction of 5¢ per 100 lb. can be obtained, the cost of the pallet would be repaid on this one item. It is our understanding that one eastern company has obtained a reduction of 5¢ per 100 lb. for truck shipments of this type. It is also possible that a portion of these expendable pallets might be salvaged and reused for making shipments of outbound materials.

Several trial shipments of 50 lb. bags loaded on expendable pallets have been made by various suppliers. The results of these ship-

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KRANE KAR
THE ORIGINAL SWING BOOM MOBILE CRANE WITH FRONT-WHEEL DRIVE AND REAR-WHEEL STEER
KRANE KAR and KARRI-GO load and unload freight cars, trucks, trailers; are indispensable for production line materials-handling, for standby, emergency, and maintenance work. Gas powered for 24 hours a day service.
KRANE KAR is the world's finest swing-boom mobile crane. It will transport any load it can lift to any part of the shop or yard. Has amazing flexibility in congested areas. Investigate KRANE KAR before you buy! 1½, 2½, 5, and 10 ton capacity; pneumatic or solid rubber tires.
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*MATERIALS HANDLING
KARRI-GO! INDUSTRIAL CRANE
KARRI-GO is the world's lowest priced 5 ton front-boom crane. Ideal for work that does not require a swing-boom. 10 ft. boom adjustable in 6 positions. Pneumatic rubber tires.
Write for Bulletin No. 73
NON-SWING FRONT-BOOM CRANE
SILENT HOIST & CRANE CO. 888 63rd ST., BROOKLYN 20, N.Y.

ments to date have been highly satisfactory since we have been able to unload the pallets from the car with fork lift equipment requiring no manual handling.

Our principal suppliers of raw materials have been consulted to obtain their reaction to making shipments of this type. To date, the response has been very encouraging. Many of our suppliers are interested and feel that the trend is definitely towards this type of shipping. They believe, however, that it will be necessary for a greater percentage of their customers to adapt themselves to handling load units before they will be able to convert their own materials handling program to this type of operation.

The palletization of raw materials has been in effect a relatively short period of time and has not as yet been extended to all departments. Sufficient success has been attained in both inside and yard operations to warrant future expansion of the program to most of the other operations.

The following is a summary of the cost of each of the divisions of the material handling program together with the savings which have been obtained. The proposals to install a special lift in Department Y and for making load unit shipments have not been included in the summary since these projects are not yet completed.

ELEVATOR LIFTING CAPACITY AND SIZE . . .

(Continued from page 20)

lb. capacity unless the power truck or load exceeds this height. Above 10,000 lb. capacity a 10′ 2″ height is usually considered standard.

4. Determination of the capacity rating must include consideration of the intended initial or probable future use of power trucks for placing skidded or palletized material on the car. The employment of power trucks for moving material in industrial plants is increasing and because of their concentrated heavy loads they cause greater stresses on the car structure and guide rails than the older practice of loading by hand trucks. Rating of the elevator must equal the actual load to be transported, with due consideration given to the weight of power trucks used in loading, even though they are not transported on the elevator. The elevator equipment must be capable of transporting not only the load but also must be able to support and, where necessary, to level the sum of the load to be transported plus the weight of the truck. Obviously, the relative weights of truck and load will influence the application. Where the weight of the truck is a fair percentage of the load, it may be necessary to choose the next larger elevator.

5. The truck with its entire load entering the elevator causes severe eccentric loading by concentrating the weight of the truck and load at the edge of the platform.

Future Use

The elevator size and capacity should provide for probable future uses and loads, so that it can be designed to give adequate service for many years. The following questions should be considered: (a.) Will the manufacturing facilities expand? (b.) Will the products now manufactured increase in size or weight? (c.) Will the load per hour increase?

The structural conditions of the building which may influence the platform size, shape and/or capacity must be taken into account in planning for a freight elevator.

AMAZING LIGHTNESS

MAGCOA DOCKBOARDS

...made of Magnesium

MAGCOA Dockboards made of magnesium, the "miracle metal", can be handled by one man without the aid of truck, chain or hoist. They weigh less than a third as much as steel boards of comparable size and strength, and are reinforced like a bridge to carry extremely heavy loads. Their lighter weight speeds up loading and unloading operations . . . cuts down danger of hernia and mashed feet or hands. Non-sparking magnesium eliminates explosion hazard, too. Every MAGCOA Dockboard is designed to the particular requirements of your docks. Write us for further information.

If lightweight magnesium is applicable to any of your products, our facilities warrant your serious consideration.

Our Materials Handling Line Includes MAGCOA Hand Trucks, Barrel Skids and Grain Shovels

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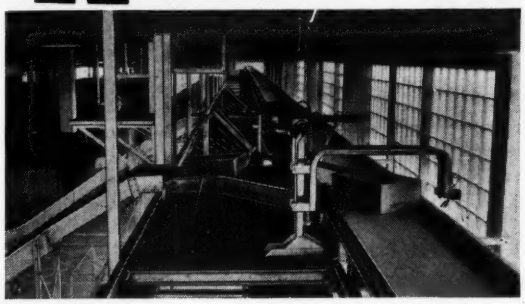
EASTERN DIVISION 30 Rockefeller Plaza, New York 20, N. Y.
WESTERN DIVISION 831 S. Flower Street, Los Angeles 14, Calif.

HERE'S HOW TO SPEED CASES THROUGH YOUR PLANT



IT'S AMAZING to watch these photo-electric eye deflectors select the proper cartons as they travel along this 250 ft. Alvey-Ferguson Belt Conveyor and distribute them to either storage or shipping rooms.

Think how this type of A-F *Engineered* Conveying System working for you in your plant would sort *your* products and speed *your* production.

Whatever your needs—from a light, portable conveyor to a complete "endless stream", products and materials handling system—write today, without obligation, to . . .

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Alvey-Ferguson

WASHING MACHINES FOR INDUSTRY

THIS *Simple* TRUCK LOADER

CUTS DELIVERY COSTS 50%

ANTHONY LIFT GATE HYDRAULIC

More "LIFT GATES" in use than all others. Simplicity of design is one reason . . . Ruggedness is another. Extra features*—proved by 6 years of field experience—are more reasons why nearly all truck loaders you see are Anthony "LIFT GATES." Write for literature, prices.

*"LIFT GATE" rests on ground. No protrusions to prevent easy loading.

*Loads from all sides at all levels with "Quick Detachable" Ramp.

*Non-sloping—Gives "*Level-lift*" to avoid loads rolling or toppling off.

*Close "Gate" easily with one hand. No power needed.

*Safety Latch locks up. "LIFT GATE" cannot be lowered accidentally.

*Lower "*Point of Leverage*" gives more power with ¼ less working parts.

ANTHONY CO., Dept. 908 STREATOR, ILL.

Conveyors

AND MATERIALS HANDLING SPECIALTIES

The Anchor Steel & Conveyor Company is an organization of practical engineers which for more than twenty years has been designing, manufacturing and erecting conveyors and conveyor systems throughout industry. Many of these projects have included conveyors for unit and final assembly operations.

In addition, Anchor engineers have developed specialties that have proved extremely valuable in mass production. One of these is the Pan Type Quench Tank Conveyor which prevents small parts from the heat treat furnace from getting lost in the tank.

Write for Bulletin 36-1

Pan Type Quench Tank Conveyor which delivers all of even the smallest parts to the unloading station.

(Left) Cut-out in normal load position. Note distance between recording ring and limit switch contact.

(Right) Cut-out when overload is encountered. Note position of recording ring which has been forced outward to contact limit switch roller.

Another is the Overload Safety Cut-out which eliminates down time when a conveyor suddenly encounters an overload. Without this device a drive pin would be sheared off and would have to be replaced while everyone on the assembly line waited.

The Overload Safety Cut-out protects the conveyor and drive but it allows the conveyor to be started again immediately the cause of the overload is removed—no waiting to replace shear pins. **Write for Bulletin A-46.** 2414

ANCHOR

STEEL AND CONVEYOR COMPANY

6906 KINGSLEY AVENUE • DEARBORN, MICHIGAN

INSTITUTE AND ASSOCIATION CHAPTER ACTIVITIES

MORE than 50 members and guests attended the November meeting of the Northeastern Ohio Chapter of the Material Handling Institute, at the Allerton Hotel, Cleveland. A. E. Aukens moderated an open discussion conducted under the title, "An Interview with Manufacturers Representatives". Chapter members who are manufacturers representatives answered more than 50 queries from fellow members. The questions covered almost every type of material handling equipment and many application aspects. The program, somewhat different from the ones usually presented, was considered to be very beneficial.

TWO talks will highlight the January 20 meeting of the Material Handling Society of Philadelphia. F. A. Miller, E. I. DuPont De Nemours & Co., will speak on "A New Development in Package Handling", and Dr. Alfred M. Sadler, Fuller Co., will talk on "Pneumatic Conveying of Bulk Material". The meeting will be held at the Poor Richard Club, Philadelphia.

MATERIAL handling men in the middle New England territory have organized the Connecticut Valley Material Handling Society. Members come from the Springfield, Hartford, Bridgeport and New Haven areas. Officers of the group are: W. D. Goyette, Westinghouse Electric Corp., Springfield, president; E. E. Jacobs, 3rd., New Haven Pulp & Board Co., New Haven, vice president; A. R. Wiley, A. G. Spalding & Bros., Inc., Chicopee, second vice president; J. L. Richardson, General Electric Co., Bridgeport, secretary; and W. Stoloff, Veeder-Root, Inc., Hartford, treasurer.

FRANK PRUCHA, Cadillac Motor Car Co., will speak at the January 19 meeting of the Detroit Section, American Society of Mechanical Engineers, Material Handling Section. Prucha's subject will be "Material Handling in Foundry Operations." The executive committee of this material handling group includes O. E. Johnson, director of industrial engineering, Kaiser-Frazer Corp., chairman; John G. Anderson, supervisor, material handling engineering methods, Cadillac Motor Car Co.; George Webb, sales engineer, Jervis B. Webb Co.; and R. V. Herman, plant engineer, Briggs Mfg. Co.

JOHN S. SAYLOR, packaging engineer, Buick Motor Division, General Motors Corp., discussed "The Use of Plastics in Automotive Parts Packaging" at the November meeting of the Michigan Division, Industrial Packaging and Material Handling Engineers. Saylor stressed the use of plastic materials in the packaging of sheet metal parts and mouldings. The group has elected the following officers for the 1949-50 term. President, Isaac E. Thomas, Ford Motor Co.; vice president, packaging, F. F. Holt, G.M.C. Truck & Coach Div., General Motors Corp.; vice president, material handling, Walter Ewend, The Budd Co.; vice president, transportation, Edwin F. Avery, Fruehauf Trailer Co.; secretary, LaVerne D. Cantine, Eddy Paper Co.; and treasurer, Randall E. Crabb, Acme Steel Co.

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Easy Way

Here's a 10 ton C-F Lifter handling bundles of sheet steel in a Westinghouse plant with ease and safety. High grade sheets like these, used in stator and rotor laminations, must be handled carefully—and in a busy plant, they must be handled quickly. That's why a C-F Sheet Lifter is doing the job.

C-F Lifters are made in manual or motor models in capacities from 2 to 60 tons or larger, in standard or semi-special designs. Write for the illustrated bulletin "C-F Lifters"—it may help solve a tough materials handling problem for you.

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APPROVED SAFETY ENCLOSURE

SAFETY IS CHEAP! Protection from open conductor bars on cranes and monorails is now available at low cost with CON-L-DUIT, a specially compounded neoprene-base insulation. It complies with Safety Codes of all States. Two sizes to fit all new and existing figure-8 conductor bar systems. Is practical on curves, straight runs, switches, interlocks and drop sections. Easy to install, safe, fool-proof, and economical.

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MULTI-PURPOSE DUMPERS for dumping bags, bulk or drums, as well as single-purpose types save handling time and reduce accidents. Dumping heights range from 5 to 12 ft. Special sizes made on order. Have lifting capacity of 500 lbs.; handle up to 100 loads per hr. ½ H.P. motor controlled by push button. Immediate delivery. Write for 8-page catalog.

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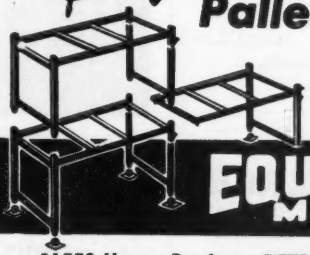
Hard-to-stack materials and products can not only be stacked as high as you wish but stacked in such a way that all or part of any pallet load is readily accessible for order picking.

These metal racks provide strength for supporting heavy loads, can be moved as storage conditions change.

Let us survey your storage area and submit our price for equipping it with . . .

Prefabricated **Pallet Racks**



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Majority Stockholder Looks at

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Lower—much lower—handling costs is exactly right. Monarch Solid Tires require no maintenance, have an extra long service life, so they cut tire costs both ways. They're tough, stable, sure-footed, and they can't puncture — Monarch-equipped vehicles go anywhere in the plant.

Monarch specialization pays off for you in better industrial tires, including such special types as Monarch Easy-Roll, Cushion, Static Conductor, and Neoprene Tires.

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Specify Monarch Solid Tires on your industrial vehicles. Monarch Tires for replacement available from the manufacturer of your equipment.

MONARCH

Specialists in Industrial Solid Tires and Molded Mechanical Rubber Goods

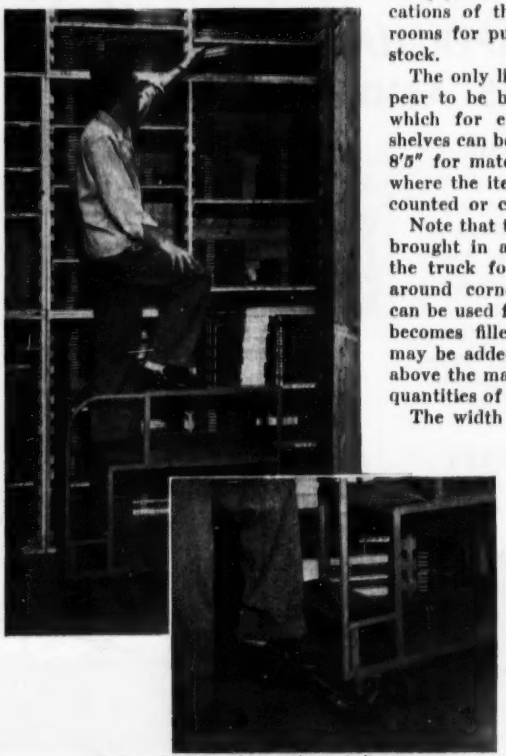
Stock Selection Ladder Truck

By W. C. COPE, Plant Layout Engineer

Taylor Instrument Companies, Rochester, N. Y.

Here's an idea for a combination stock selection truck and ladder. This unit is adaptable to many kinds of small-size merchandise which comes in a variety of styles.

THE idea for this truck occurred to the writer when a newly established stockroom for instrument charts required three step ladders, two high ladders and a dolly to get out the orders. As the order clerks covered nine aisles, they had to drag the ladders from aisle to aisle. This combination step ladder and truck gives the clerks a ladder as well as a carrying platform for the stock they are selecting.



Broken lines in large photo indicate extra shelf space that can be added.

Stability is obtained by using two standard truck locks, with the actuating levers welded to a common bar. A flick of the toe makes the truck stationary; another flick, and it is free to move again. Safety tread strips are cemented to the plywood steps to insure good footing.

The truck was made light in weight by the use of lightweight casters, electrical conduit, lightweight angle iron and plywood. We expect to use modifications of this design in other stockrooms for putting away and obtaining stock.

The only limitations of the truck appear to be bunking or storage height, which for easily handled objects on shelves can be as high as 10'4", but only 8'5" for material stored in shelf boxes where the items selected must be seen, counted or carefully handled.

Note that the stationary casters were brought in about 8" from the end of the truck for greater maneuverability around corners. Intermediate shelves can be used for stock storage if the top becomes filled up. Additional shelves may be added (see broken lines shown above the main platform) where larger quantities of stock are handled per trip.

The width of this truck was kept at 18" because of the 33" aisles; for wider aisles, it could be made wider and higher. Our revised model, also 18" wide, will be 4' high instead 3', and about 6" longer. By using still lighter construction, we expect to retain about the same maneuverability; the extra height will allow us to reach the top shelves in the rest of our stockrooms, making the truck adaptable for plantwide use.

MATERIAL HANDLING INSTITUTE OFFICERS FOR 1950

At the annual meeting of the Material Handling Institute Inc., held in New York on December 6, the following officers were unanimously elected for 1950. President, J. H. W. Conklin, Clark Equipment Co.; first vice president, John G. Bucuss, Acme Steel Co.; second vice president, L. West Shea, Union Metal Mfg. Co.

President
J. H. W. Conklin
Clark Equipment Co.

First Vice President
J. G. Bucuss
Acme Steel Co.

Second Vice President
L. W. Shea
Union Metal Mfg. Co.

At the same time, the members of the various Product Sections elected chairmen who will also serve on the board of directors. They are: Casters, chairman, W. H. Noelting, Faultless Caster Corp.; vice chairman C. M. Mead, Divine Bros. Co. Conveyors (to be elected).

Electric accessories, chairman, C. B. Elledge, General Electric Co.; vice chairman, C. J. Moore, Electric Storage Battery Co.

Electric Hoists, chairman, J. C. Mevius, American Engineering Co.; vice chairman, H. H. Kumler, The Euclid Crane & Hoist Co.

Electric industrial trucks, chairman, L. J. Kline, The Mercury Mfg. Co.; vice chairman, W. A. Meddick, Elwell-Parker Electric Co.

Floor trucks, chairman, C. H. Strauss, Ironbound Box & Lumber Co.; vice chairman, E. C. Hamm, Service Caster & Truck Corp.

Gas Trucks, chairman, J. W. Wunsch, Silent Hoist & Crane Co.; vice chairman, C. E. Smith, Towmotor Corp.

Hand lift trucks, chairman, Geo. G. Raymond, Lyon - Raymond Corp.; vice chairman, W. C. Stuebing, Lift Trucks Inc.

Monorails and tramrails, chairman, J. P. Lawrence, American Monorail Co.; vice chairman, E. R. Ransom, Richards Wilcox Mfg. Co.

Motorized lift trucks, chairman, Howard M. Palmer, Lewis-Shepard Products, Inc.; vice chairman, I. F. Schreck, The Moto-Truc Co.

Pallets, containers and auxiliary equipment, chairman, G. J. Hanhauser, Fab-Weld Corp.; vice chairman, R. J. Himmelright, Monarch Rubber Co.

Strapping, chairman, H. C. Bristoll, The Stanley Works; vice chairman, Adolf Larsen, Gerrard Steel Strapping Co.

TRUCKERS — AND THEIR BOSSES AGREE ON

"Weld-Bilt" PRODUCTS

Weld-Bilt Wide Model Hydraulic Lift Truck

Let your truckers try the easy-rolling WELD-BILT Lift Truck on your job. They'll quickly show you it moves with less effort, is simpler to operate, easier to maneuver into accurate position. It saves time that can be added to profitable production.

Pallet Trucks

Just as important to you . . . WELD-BILT Hydraulic Lift Trucks are engineered and built for longer service — and prove it daily in thousands of plants. One of many reasons for this is HORIZONTAL MOUNTING of the Hydraulic Unit, locating it in a protected position away from any danger of knocks and bumps. And, because this unit is interchangeable, it can be replaced for extra years of service.

Portable Electric Elevators

Skid Platforms

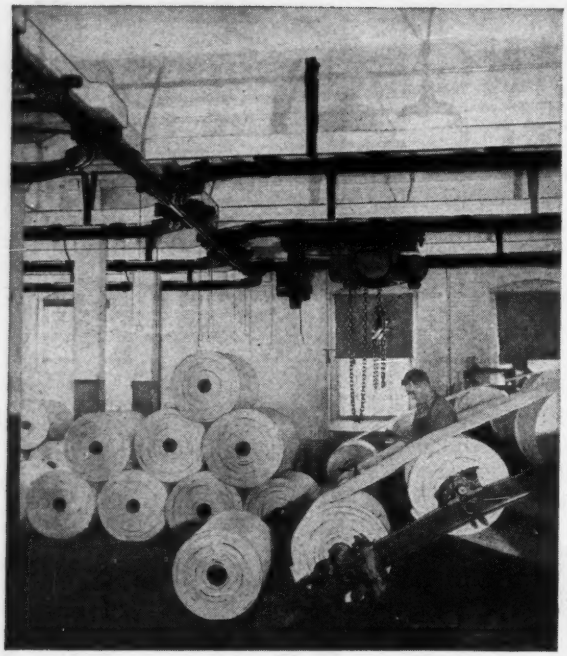
Put the easier-handling, longer-wearing WELD-BILT Hydraulic Truck to work smoothing out your materials handling problems. There's a size to fit your needs exactly. Write for bulletin and details.

Two-Wheel Trucks

WELD-BILT Products Include: Portable Electric Elevators, Hydraulic Lift Trucks, Pallet Lift Trucks, Platform Trucks, Two-Wheel Trucks, Skid Platforms, Tiering Machines and other special equipment.

Platform Trucks

WEST BEND EQUIPMENT CORPORATION
Materials Handling Engineers
229 Water St. • West Bend, Wisconsin



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COBURN

CONVEYING EQUIPMENT

You can lower costs, speed production and reduce accident hazards with Coburn . . . the original enclosed overhead monorail. If your processing operations call for moving or lifting of loads up to 3000 lbs., Coburn can eliminate many "back breaking" problems.

The Sectional design of Coburn Enclosed Overhead Monorail permits easy installation, rearrangement or extension, as required. It can be used with hand or electric hoist; does not obstruct floor space; requires very little headroom; and permits easy spotting of work directly over machines.

Write today for our catalog showing full details on Enclosed Track, Bracket-Type Jib Cranes, Travelling Cranes and Monorail installations.

Engineering help available without obligation.

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ON THE PALLET

(Continued from page 42)

6. This, combined with the record number of 92 exhibits, made this Exhibition the largest in its history. Equally successful was the second Wayne University Packaging and Materials Handling Institute, where an expected enrollment of 300 people reached approximately 400. This "school" featured lectures and illustrated talks by leading industrial and packaging figures together with discussion periods. A repeat Institute is planned for next year.

THE American Management Association has announced that its 19th National Packaging Exposition, annual market place for packaging, packing and shipping materials, machinery, services and design, will be held April 24-27 at the Navy Pier in Chicago. J. M. Cowan, chairman of the Exhibitors' Advisory Committee and assistant director of distribution of the Dobeckmun Co., estimated that the attendance at the 1950 Exposition will exceed 14,000. At the same time Cowan announced an analysis of the attendance of this year's Exposition in Atlantic City. Representatives of over 5,000 firms in 400 industries explored the products and services offered by 200 exhibitors in the $6 billion-a-year packaging, packing and shipping industry.

CONTROLLERSHIP in Modern Management is a book published by Richard D. Irwin, Inc., Chicago, and sponsored by the Controllers Institute of America through its research arm, the Controllership Foundation, Inc. The 241-page volume is priced at $4.00. Contributors to the book include David R. Anderson, treasurer, W. B. Saunders Co.; B. C. Peacock, chairman of the board, Caterpillar Tractor Co. and other leaders of industry. Subjects covered are: on-the-job training for white-collar workers; office morale; selling employees on standards and controls; communications; manufacturing cost accounting; sales and administrative cost accounting; the annual report and public relations and other related subjects.—*Courtesy, The Conveyor Equipment Manufacturers Association Bulletin.*

DRS. C. H. Townes and P. Kusch of Columbia University, both leading authorities in their fields, have been appointed consultants to the Microwave Standards Laboratory of the National Bureau of Standards, where they will be available for consultation on microwave absorption spectroscopy and atomic beam equipment for use as frequency and time standards. Their work will be a continuation and extension of research in microwave spectroscopy and standards using absorption methods.

NEWS FROM THE SALES FIELD

THE Baker Industrial Truck Division of The Baker-Raulang Co. announces the appointment of Edgar E. George as district sales representative with headquarters in High Point, North Carolina. In this capacity, George will serve as material handling engineer for Baker truck applications and will handle the sale of the equipment. Associated with Mr. George is James H. Rigby.

SPEEDWAYS CONVEYORS, INC., has announced the appointment of Mason W. Haigh & Sons, Peoria, Illinois, as distributor for its line of wheel and roller gravity conveyors and endless belt boosters. The distributor also handles the lines of Automatic Transportation Co.; Cleveland Tramrail Div., Cleveland Crane & Engr. Co., and Rotary Lift Co.

CAYNE Hoist Distributors, Inc.: this company has been appointed exclusive distributors for electric hoists manufactured by the Whiting Corp. Sales will be made to resale accounts in the material handling, mill supply and hardware fields.

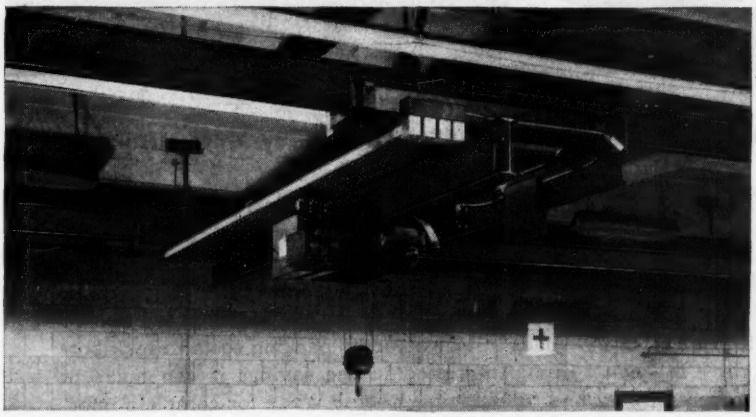
H. C. DAVIS, Inc., New England distributor for Towmotor Corp., has announced the appointment of E. W. Lucas as general manager of its materials handling division. Lucas is an active member of the Boston Chapter of the American Materials Handling Society.

APPOINTMENT of Cecil Roy Pond as sales representative in Birmingham, Ala., for the Automatic Transportation Co. has been announced by Elmer F. Twyman, general manager of Automatic. Pond's territory will include Alabama and the northwestern part of Florida. Headquarters are at 625 Comer Building, Birmingham.

APPOINTMENT of James F. McCabe as its Louisiana and Mississippi sales representative has been announced by the Automatic Transportation Co. The firm, located at 348 Baronne St., New Orleans, operates under the name of Jim McCabe, Materials Handling Equipment.

PROMOTION of William Rausch to assistant sales manager of Rapids-Handling Equipment Co., Buffalo, has been announced by Virgil Owen, manager. Rausch joined the firm in 1946. Owen has also announced the appointment of Harry J. Riether as sales engineer.

ABELL-HOWE
Builds The Crane You Need



Twenty-five years concentrated on overhead handling equipment have made the Abell-Howe line complete as well as efficient. That is why, whether you need a motorized or hand operated crane, monorail equipment, or electric hoists, you are likely to find precisely the size and type your operations require in the Abell-Howe line. You will find, too, that in low initial cost, economy of operation, dependability of performance, and engineering service, Abell-Howe has much to offer you. Write us about your crane needs today.

Ask today for **Catalog C-102**

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53 W. JACKSON BLVD., CHICAGO 4, ILLINOIS
CRANES AND RUNWAYS • MONORAILS • HOISTS • STORAGE RACKS

Efficiency goes **UP**

Costs come **DOWN**

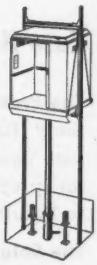
Rotary Oildraulic Elevators are the most economical type for 2, 3 or 4 story buildings

Smooth, quiet operation
Smooth starts and stops, accurate floor leveling, and quiet operation are guaranteed by Rotary's precision mechanism.

No costly penthouse
Because it's pushed from below, not pulled from above, an Oildraulic Elevator requires no costly, unsightly penthouse.

Lighter shaftway structure
Rotary's powerful Oildraulic jack supports the car and load—so there's no need for heavy, load-bearing columns and footings.

Over 50,000 Rotary Oildraulics in Use
Rotary, oldest and largest maker of oil hydraulic elevators and lifts, has served major companies and building owners throughout the nation. Our coast-to-coast organization offers the most complete service in this field. Write for Catalog.



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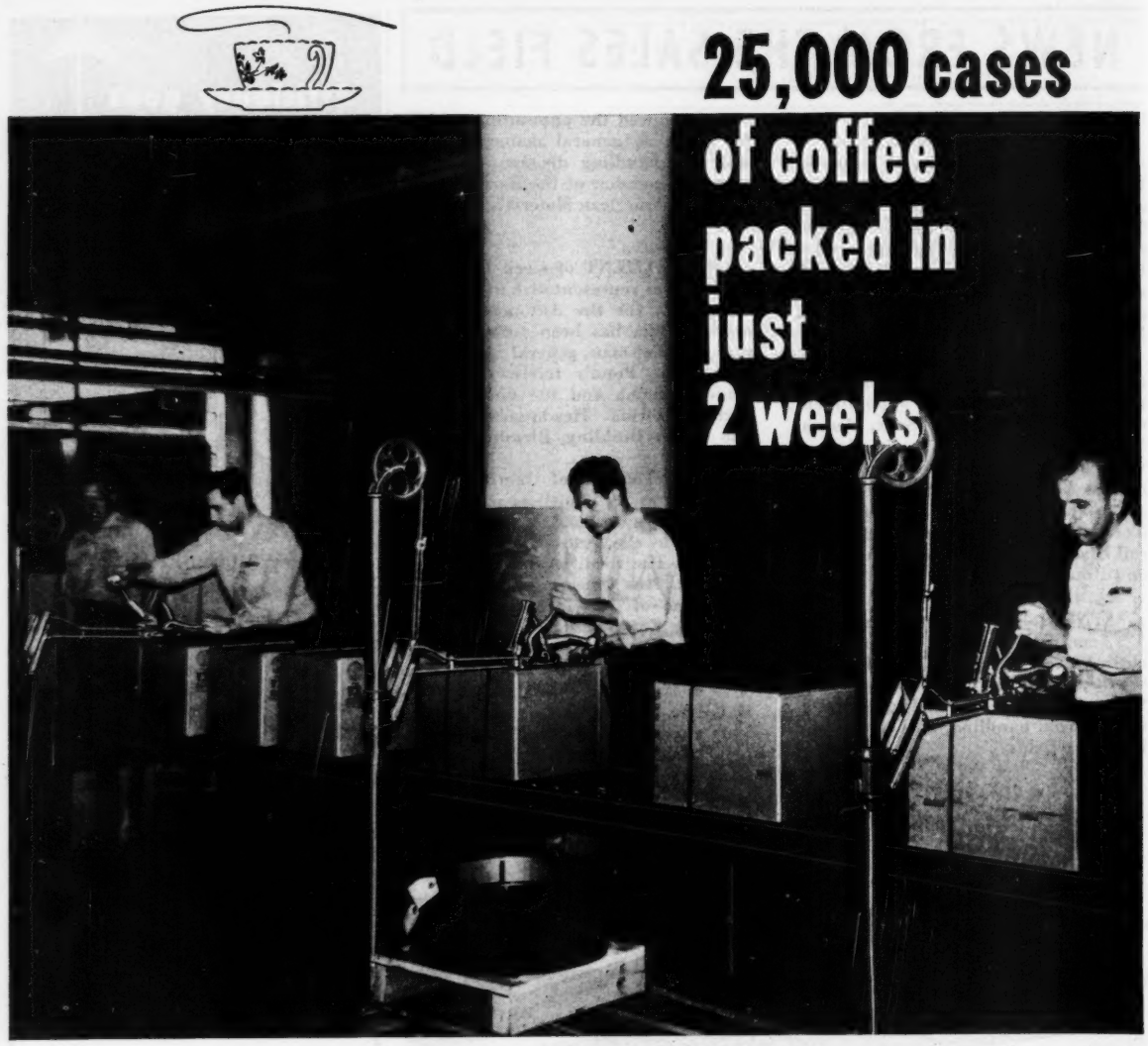
1138 Kentucky, Memphis, Tenn.

Rotary
Oildraulic Elevators
PASSENGER AND FREIGHT



Case History Of Another Typical Shipping Problem Solved By Stanley Steel Strapping

The Problem: A leading New York coffee company had to pack 25,000 cases for export in just two weeks. There was only a limited time for preparation, and no experienced personnel to handle the job.

The Solution: Specifications called for three straps per carton. Stanley recommended three Mechanical Arm Mounts with Stanley Ace Strapping Tools to be set up at the conveyor as shown, with Model N Reel Stands behind the operators. Running 24 hours a day, in spite of operators' inexperience, job was finished with half a day to spare.

That's typical of the way Stanley Steel Strapping saves time, labor and money shipping almost any type of product. Stanley Steel Strapping is quick and easy to apply—gives greater protection to goods in transit—cuts packing costs to rock bottom. Interested in the savings it can make in *your* Shipping Room? Write for complete information or have a Stanley representative call now! The Stanley Works, Steel Strapping Division, 203 Lake Street, New Britain, Connecticut.

STANLEY

Reg. U.S. Pat. Off.

STEEL STRAPPING
AND CAR BANDING SYSTEMS

HARDWARE • HAND TOOLS • ELECTRIC TOOLS • STEEL STRAPPING.

PACKAGING MECHANICS SECTION

A regular monthly section in which are presented solutions to the problems of efficient filling and handling the boxes, cartons, bags, bottles, cases, etc., used in commerce and industry.

CONTENTS

Two photo reports—the main steps in each sequence are graphically shown in a progressive photo series.

PACKING OF PORTABLE ADDING MACHINES—with special emphasis on finish and product protection. Of more than usual interest is the application of a conveyor system that maintains continuous delivery of these machines from fourth-floor inspection to ground-floor packing. Note, also, the simple conversion of the domestic pack for export purposes 58

STANDARD WOODEN SHIPPING CASE For Varied Machines—a vulnerable machine consisting of thousands of precision parts is shipped with a record low for damage claims. A third rail adapts one box to several models, eliminating five different containers used before. The modernization project extended to the shipping dock, which is also discussed, along with improved packaging production methods..... 60

1. AT THIS FOURTH-FLOOR station inspected desk model machines are loaded on 24"x 24" conveyor trays for delivery to ground-floor packing.

Packing of Portable Adding Machines

The data for this article and the one on the following pages were furnished by

H. A. HUNT,

Superintendent of Packing-Receiving-Shipping
Burroughs Adding Machine Co., Detroit

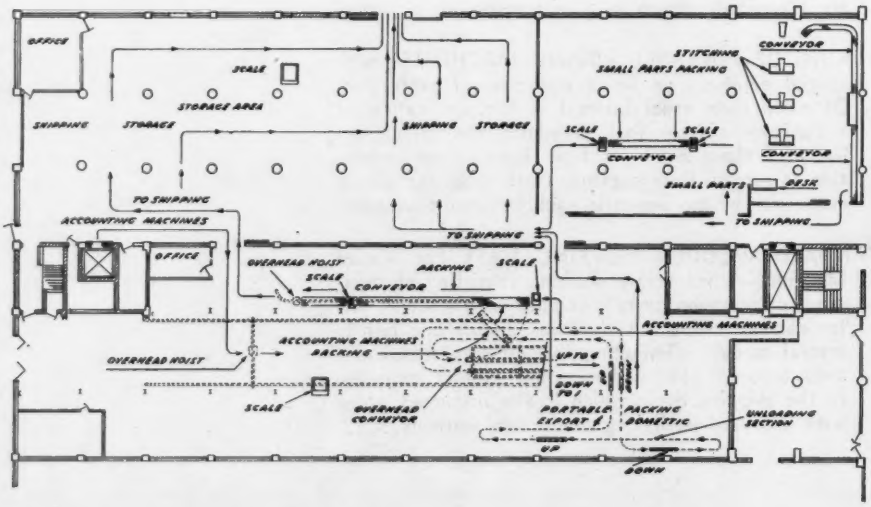
"A 30 per cent greater packing output"

THE two packing operations at the Burroughs Adding Machine Co., Detroit, which are featured here were chosen for this photo report because they have (a) solved a knotty problem of layout and handling and because (b) they resulted in outstanding packing production increases within the recent past, besides effectuating an extremely low percentage of damage.

Among specific solutions and accomplishments are the following: 1. A 30 per cent greater packing output per manhour on portable machines, which are packed in corrugated shippers. (These are the subject of this first report; the second one, immediately following, is devoted to the larger accounting machines which are shipped in wooden cases.) 2. Effective tie-in of a fourth-floor inspection station with a packing department on the ground floor. 3. A 50 per cent greater output in the interior packing preparation function, which is attributed to stitching of all fittings and cells. 4. Of tens of thousands of these portable machines shipped in a six-month period, damage reports were on considerably less than 1% of the total. NOTE: Rigidity of cells and fittings is given the major credit for this. 5. Simplicity of procedure for export packing, which consists of the addition of two elements.

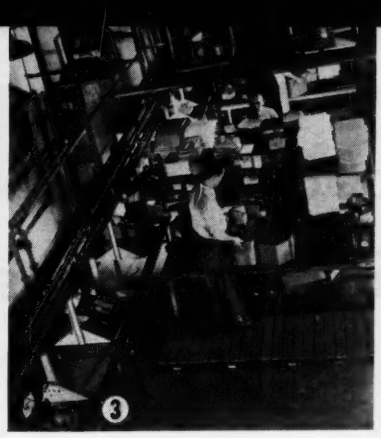
Since improvements in shipping platform facilities and yard layout (for delivery trucks) affect the packing of the larger accounting machines as well, these two factors are included in the pictorial report that follows.

The quality of these and other Burroughs engineered packages has understandably been recognized with coveted prizes that were awarded the company at several packaging expositions.

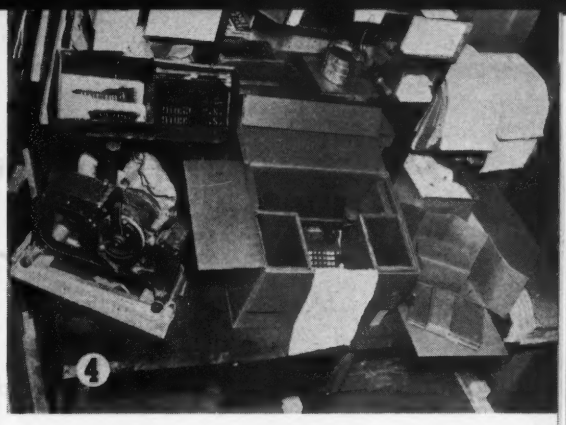


LAYOUT OF REVISED packing department with work stations and adjacent areas. Sketch of revamped shipping dock is on next spread.

2. CONVEYOR DECLINES through this tunnel to lower floor. 309 trays store as many machines, saving floor space, rolling stock, rehandling.



3. PACKING STATIONS ON GROUND FLOOR alongside chain conveyor which circulates and stores machines. 1236 ft. conveyor travels nine FPM.

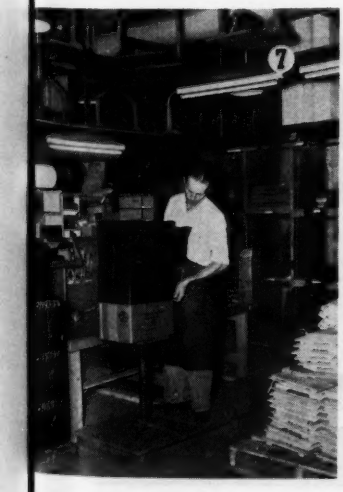


4. PORTABLE (wide carriage) machine is held snugly in carton by rigid fittings. Piece extending is creped wadding for finish protection.

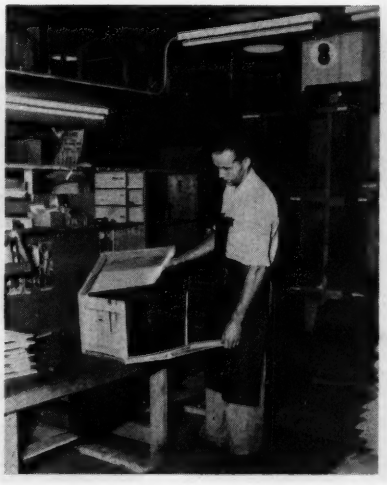
5. SECOND VIEW of same box, with all fittings in place, just before sealing. Each bench has tape dispenser, stencils, wadding supply, etc.

6. PACKED CARTONS are palletized, whereupon full pallet loads are moved by pallet hand truck. See truck dock with hydraulic ramps, next page.

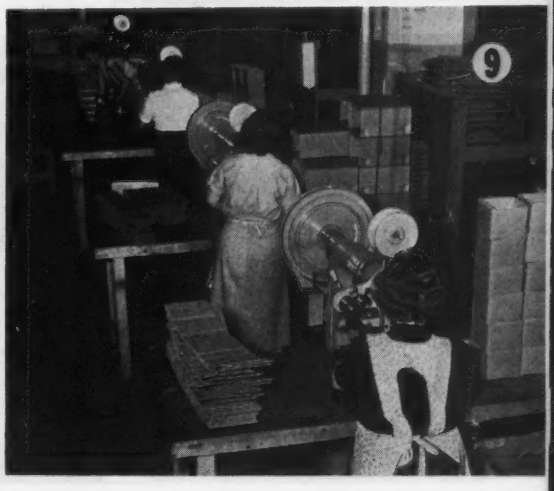
7. FOR EXPORT, packed desk model machine receives laminated waterproof liner, which is slipped over carton on stand, as shown.



8. FINAL STEP for export pack is addition of wirebound crate over liner. Simplicity of flow and handling indicates good Burroughs planning.



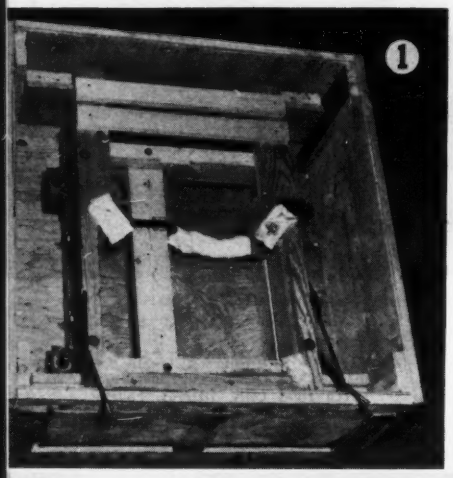
9. BATTERY OF STITCHING machines. First three machines stitch rigid cells, fittings. Fourth one is bottom stitcher for corrugated cartons.

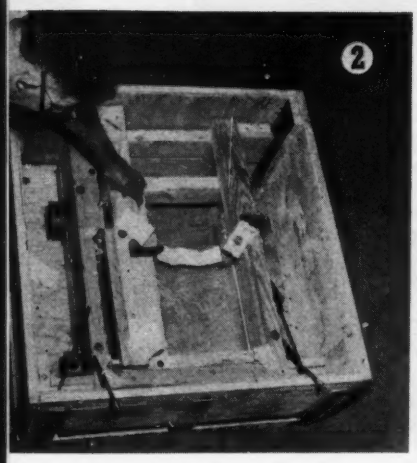


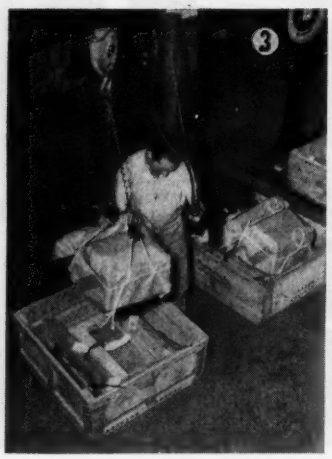
A Standard Wooden Shipping Case For Varied Machines

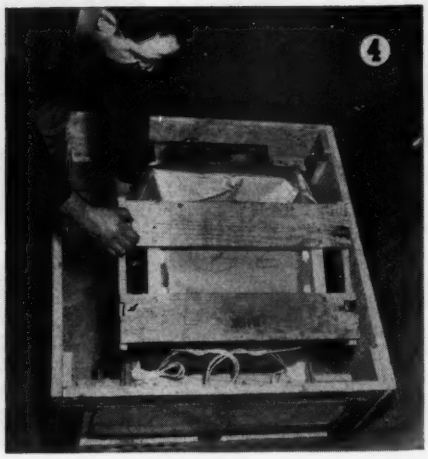
"The specially equipped standard box replaced five old ones"

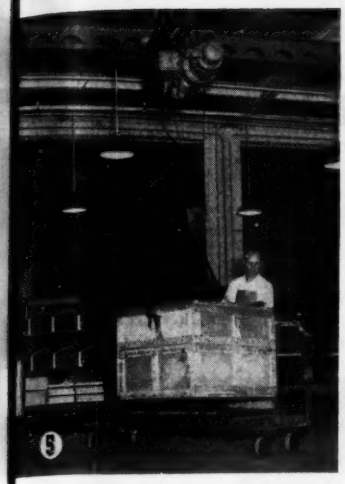
BURROUGHS' revamped packing-shipping operation is also impressive for the comprehensive planning job that is evident behind it. The planning extends from the design of a standard box to the rearrangement of the yard area. Among improvements effected in the packing of the (larger) accounting machines in wooden cases the following achievements are outstanding. 1. Power handling in conjunction with palletization saved about 50 per cent of available warehouse space. 2. Adoption of a standard wooden shipping box sharply reduced the sizes of containers that were previously needed. Example: The specially equipped standard box now in use replaced five old ones, partly because of the "third rail" which is added to the spring-mounted cradle to accommodate narrower machines (see photos). 3. The addition of an electric hoist on a cross-over bridge has aided packing production, eliminated physical strain, and contributed to SAFE handling. 4. Since the specially equipped box (costing $35 each) makes an average of 14 round trips, the packing cost in relation to cost of product is actually less than 1%. 5. The addition of a series of hydraulically operated loading ramps (one for each truck bay) has enabled the same equipment to handle a 300 per cent greater volume in and out of highway vehicles. 6. Burroughs' over-all revamping project included a better yard layout, as follows. Old docks were torn out and rebuilt at the rear of the yard, which added 25 ft. to the former 33 ft. width of the yard. Now 38 ft. trailers have room needed for maneuvering (without jackknifing vehicles). Thus better yard layout and hydraulic leveling platforms have speeded receiving, brought loading in balance with increased packing capacity.

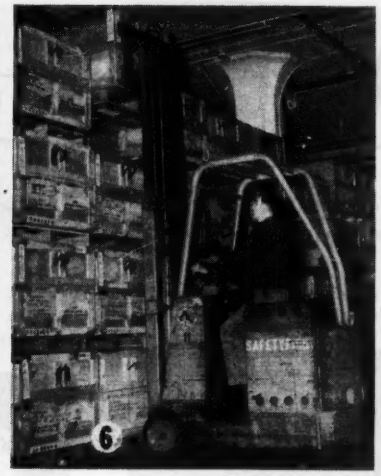


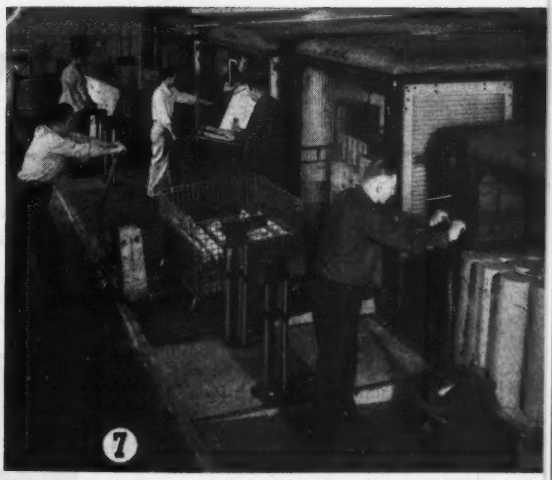












1 WOODEN CASE FOR accounting machines. Bottom of spring-mounted cradle is screwed to box, upper part rides on springs, giving "floating" effect.

2 THIRD RAIL ADAPTER being placed on cradle to accommodate narrower machine. Standard case has replaced five that were formerly necessary.

3 ELECTRIC 1000 lb. hoist lowering machine on cradle. Crossover bridge gives hoist access to whole width of bay, which is aid to production.

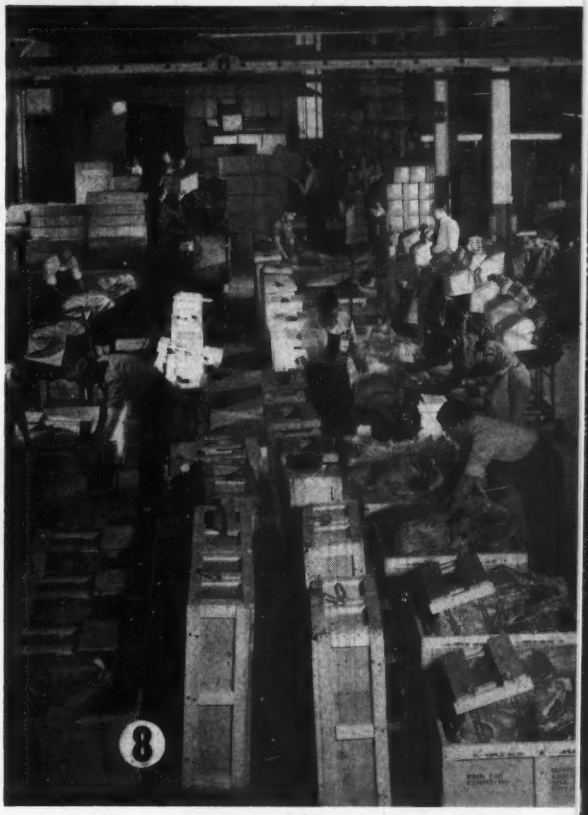
4 RETAINING CAP is here shown in position on the machine. It is held by two rods on each side. Each rod has wing nut, lock washer for tension.

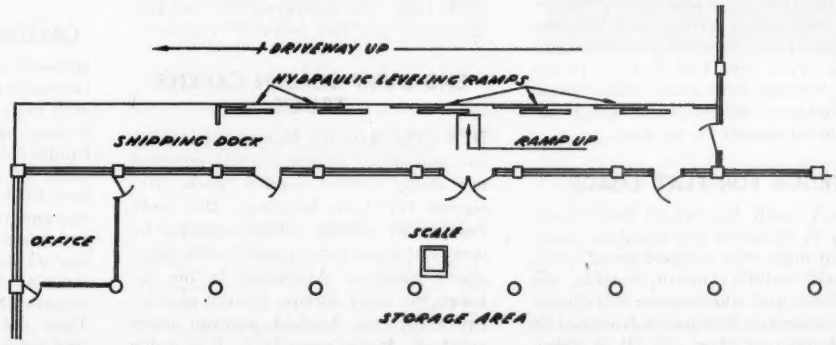
5 HOIST IS LOWERING packed box on caster-mounted roller section, "hinged" with ring bolts to permanent line. Case top is bolted with 12 bolts.

6 PALLET HANDLING of shipping boxes has more than saved floor space. Workers need no longer lift heavy units. Better working conditions resulted.

7 NEW HYDRAULIC LOADING RAMPS on shipping dock. This equipment, plus rearranged yard layout, has enabled company to handle 300% greater load.

8 FULL VIEW of packing bay, showing monorail crane spanning width of department.





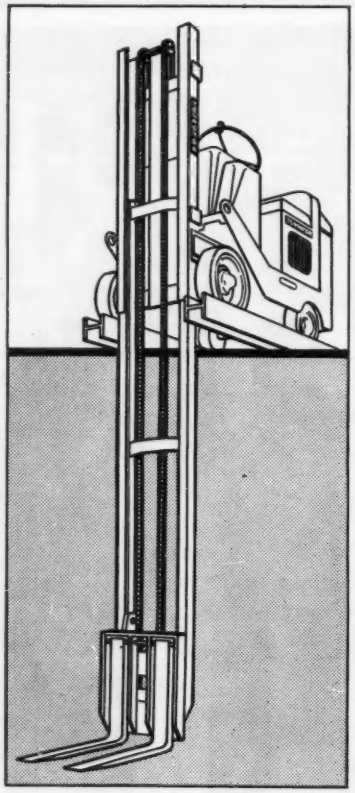
NEW HYDRAULIC RAMPS on shipping dock have increased in-and-out volume capacity by several hundred per cent.

NEW PRODUCTS

For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13, or use postcard bound into this issue.

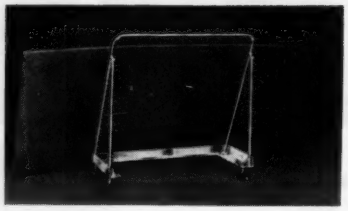
"ELEVATOR" FORK TRUCK

NP1—An "Elevator" fork truck engineered to lower and raise heavy loads between balcony storage areas and first floor production lines has been developed by Towmotor Corp. A non-tilt mast and carriage assembly are designed for lowering the forks 98 ins. below balcony floor level. Mounted on a standard Towmotor fork truck, the elevator unit has a lifting and lowering capacity of 2000 lbs. Full capacity loads can be lifted from first floor to 10 ins. above balcony floor level. This "elevator" design is believed to be one of the first developments of its kind.



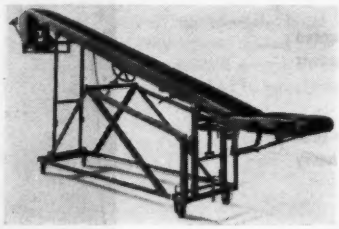
TRUCK FOR FLAT LOADS

NP2—A small four-wheel hand truck, Model C, designed for handling large-size flat loads such as sheet-metal, glass, plywood, building board, marble, flat case goods and other similar odd dimensional materials has been introduced by the Honeyman Mfg. Co. It is fabricated of aluminum alloy pipe which fits into an angle steel base. Dimensions are: height, 48″; length, 45″ and width, 28″. The truck weighs 50 lb. and has a capacity of 600 lb. with 4-in. casters, and 1200 lb. with 6-in. casters.



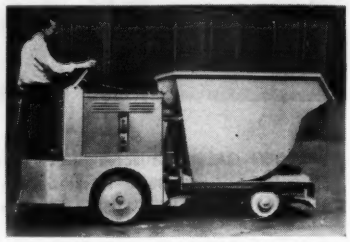
PORTABLE BELT BOOSTER

NP3—A portable belt booster, manufactured by Sage Equipment Co., is designed primarily as a floor-to-floor conveyor and stacker. It is available with belts 6″ to 36″ wide in lengths of 12, 15, 18, 20 and 24′. Various capacity motors are available, depending on load to be carried with either slider or roller bed construction. The unit is furnished with a power-driven tail feeder and wheel, roller gravity section, or nosed-over delivery. Positive screw-jacks in the raising mechanism allow the conveyor to be locked in any desired position. Under carriage construction is of heavy angle iron. The conveyor rides on two stationary and two swivel 5″ casters.



END DUMP BURDEN CARRIER TRUCK

NP4—The Mercury Manufacturing Co. has announced a new battery-powered end dump burden carrier truck. Designed for bulk handling, the body dumps by gravity when released by means of a lever convenient to the operator's position. According to the release, the body dumps cleanly and returns to lever latched position when emptied. Body capacity is 1-½ cubic yds.; the truck load capacity is rated at 6000 lb. The truck chassis has four-wheel lever type steering, double reduction drive axle, semi-elliptic spring suspension, and mechanical contactor travel controller.



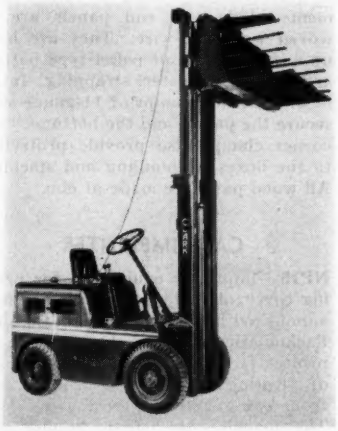
FOR TOTE BOXES AND TUBS

NP5—The Moto-Truc Co. has developed a walkie-type electric truck designed for transporting tote boxes and/or tubs. The forks surround the containers which are lifted by a hydraulic mechanism, then lowered at the point of use. The truck has a capacity of 1200 lbs. and a two-in. lift. The forks are 14 ins. long on the unit pictured, although the length is variable. They are constructed to fit trunnions of bell bottom containers and flanges of tote boxes. The vehicle rolls on two casters in the rear and one rubber-tired drive wheel in the front.

GRADING-FORK ATTACHMENT

NP6—A gravity-dump grading fork attachment for the handling of bulk materials too large to pass through a 2½-in. screen, has been introduced by Clark Equipment Co. The attachment is applicable to all models of the company's fork-lift trucks of 2000-lb. capacity and up, and is interchangeable with standard forks and attachments for mounting on standard uprights or low lift models. The fork has ¾-in.-diameter removable tines spaced on 1-in. centers. They are designed for changing the tine-spacing for handling coke, coal of

larger sizes, sugar cane, vegetables, hides, stockyard litter, bones, corn cobs and similar materials. The grading fork is constructed of ¼-in. steel plate mounted on a fixed plate of ¾-in. hot



rolled steel. When the load is raised the fork locks in position; and the load is dumped when released by a 15-lb. pull. A pneumatic snubber minimizes the shock and strain of dumping. (The grading fork is not available for export sale.)

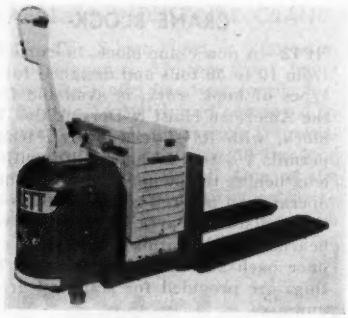
TRUCK DOCK LEVELLING MECHANISM

NP7—Savings in truck loading time, man hours and dock space are stated as features of the Adjusta-Dock, an hydraulic truck dock, manufactured by

Rowe Methods, Inc. Bringing the dock level with the truck floor is designed to facilitate rolling hand or power trucks into the body of the carrier, permitting easier and faster handling of palletized loads, loads of numerous small parcels, and heavy or "hard-to-handle" shipments. Push button control of the hydraulic ram quickly brings the loading platform level with the truck floor.

LIFT TRUCKS WITH GAS-ELECTRIC POWER UNITS

NP8—The Barrett Power Ox line of electric lift trucks, pallet trucks and tractors, manufactured by the Barrett-Cravens Co., is now optionally available with gas-electric power units. These gas-electric units have been developed to obtain maximum efficiency from motorized lift trucks and to provide a power supply that delivers maximum voltage 24 hours a day when needed. The unit's "Walking Speed Control" provides three variations for each speed available from the truck's standard mechanism. This permits the right speed for "inching" the load in confined



spaces. The steel housing shown encloses the unit's members: industrial gasoline engine, generator, fuel tank (located in the base for safety), starting battery and accessories.

PORTABLE LOAD BOOSTER

NP9—Island Equipment Corp. has announced a portable, belt load lifting unit, the Styl-O-Veyor Junior. The unit is designed for loading and unloading trucks and freight cars or moving materials from one level to another. The

belt is reversible and has a lifting angle of 32 degrees. The load rides on a three-ply rubber belt. It is powered by an oversized aluminum geared head motor. The load bed is made of 10-gauge one-piece formed steel with large pulley ends. Sturdy steel support frame with wide bottom cross members is designed to prevent side sway. Support frame struts, cross members and extension arms are all welded into a single unit. Three casters and wheels are ball bearing mounted for maneuverability.

LIGHT-DUTY FORK TRUCKS

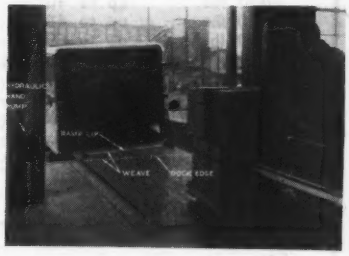
NP10—The Baker Industrial Truck Division of The Baker-Rauling Co. has announced two new models of the Type FT Central-Control Fork Truck with capacities of 3000 and 4000 lb. They are designed for use in narrow aisles and congested production areas. Model

FT-30 has a single lift of 64″, a telescopic lift of 126″ and a free lift of 63″; the capacity is 3000 lb. The truck has an outside turning radius of only 73″.

Model FT-40, with a capacity of 4000 lb., has identical lifting heights and turning radius. Both models have a unit-welded, heavy-gauge all-steel frame which contains an integral hydraulic tank. A steel plate bumper at the rear of the truck provides the counterweight. The vehicle's direction is selected by a manual control on the dash panel, and speed is selected by a five-speed foot-operated accelerator. A mechanical interlock prevents reversing except with the accelerator in neutral. Standard equipment includes high-profile cushion tires. A knuckle-type axle with rubber-mounted transverse pivot provides compensation for uneven roadways. For further information use the card bound into this issue.

LOADING RAMPS

NP11—Hydraulic and mechanical loading ramps are available from Arthur S. Hamilton, Jr. When a vehicle is being backed up to the dock, the front edge or lip of the ramp is raised above the



truck's floor level, then lowered when the carrier is in place. The lip floats with the motion of the truck floor so that as the springs settle down the ramp maintains a smooth level. The lip is designed to dip on one side if the truck in unevenly loaded or has weak springs. Thus, the ramp is flush with the truck floor under all conditions, it is said. Mechanical and hydraulic models are available. Ramps are manufactured in 12-ft., eight-ft., and five-ft.

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AVAILABLE IN STANDARD SIZES:

Load	Deck Board Length
2000 lbs.	up to 40"
1000 lbs.	up to 48"
500 lbs.	up to 60"

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lengths. Widths range from five ft. to six ft., six ins. Capacities range from five to 10 tons.

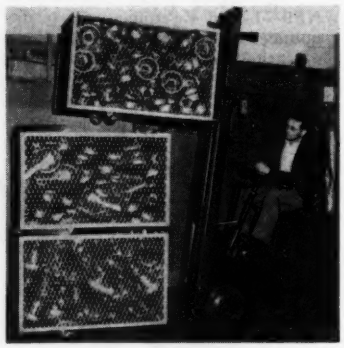
CIRCLE NUMBERS ON THE CARD AND MAIL!

CRANE BLOCK

NP12—A new crane block, in capacities from 10 to 50 tons and designed for all types of hook work, is available from the American Hoist & Derrick Co. The block, with its shorter overall length, permits 1½ to 2 ft. higher lifts without lengthening the boom. The forged hook operates on tapered roller bearings and the cast steel sheaves are equipped with bearings. Lubrication is necessary only once each 2000 hours, it is said. Fittings are provided for standard grease gun use.

TIERING TRUCK

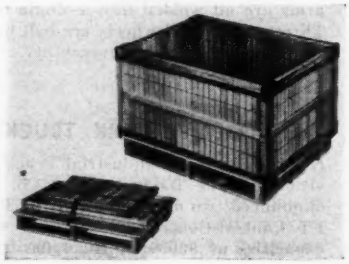
NP13—This Tier Truck, built by the Donaldson Co., Inc., is designed to speed handling of parts and materials, rolls on casters and may be stacked by standard lift trucks. The basket-type con-



struction permits complete visibility of the truck's contents. It is equipped with two wheels and one full-swiveling caster for on-the-floor travel. The vehicle has an angle iron frame and heavy-duty expanded metal basket. The unit is 48 ins. long, 30 ins. wide and 32½ ins. high. The weight capacity is 1000 lb.; volume capacity is 25 cu. ft.

COLLAPSIBLE WOODEN CONTAINERS

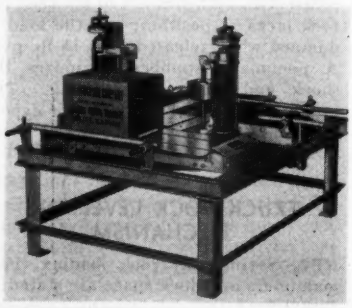
NP14—The G. B. Lewis Co. his expanded its line to include a collapsible



wooden box. Known as the Lewis Collapsible No. 2 Box, it is designed for material handling in a plant or between plants, and for seasonal storage of parts or finished products. The box can be quickly disassembled for return shipments. Side and end panels are of woven wood-and-wire. They are built up around a skid or pallet-type bottom and banded with steel strapping. Interlocking corner clamps of 11-gauge steel secure the panels and the bottoms. The corner clamps also provide protection to the boxes in handling and stacking. All wood parts are made of elm.

CASE IMPRINTER

NP15—Improved equipment for printing corrugated shipping cases has been announced by J. L. Ferguson Co. The Packomatic automatic shipping case imprinter is designed for a wide variety of printing combinations in type sizes from one-quarter in. to 1½ ins. high. The machine uses foam rubber type

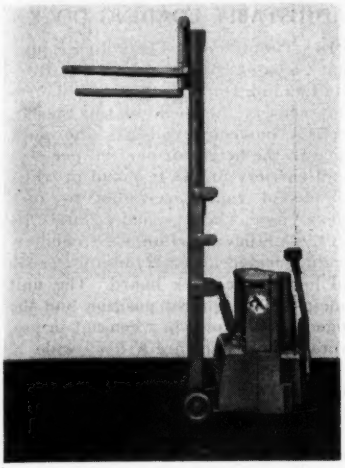


faces that follow case contours and are said to eliminate fadeouts. It is further stated that quick-drying inks in various colors permit immediate handling of cases without danger of smear or smudge. Automatic inkers feed ink to the rolls. The imprinter is adaptable to industries using paper shipping cases, regardless of contents. Case range includes lengths of from 12″ to 23″; widths of 8¼″ to 14¼″; case heights from 3″ to 18″. Equipment for larger size cases is also available. The Packomatic unit is part of the production line, receiving loaded cases as they are discharged from the compression unit of case sealer. Cases are timed into the printing rolls, printed and discharged for storing or shipping at speeds up to 20 per minute.

HIGH-LIFT STACKING TRUCK

NP16—Lewis-Shepard Products, Inc. has developed an addition to its line of Master JackStackers, hand-guided electric trucks designed for horizontal and vertical movement. The latest model, a counterbalanced fork-type unit, is designed for loads up to 1000 lb., 48 ins. long. It is made in telescopic and non-telescopic models with fork elevations up to 130 ins., and is only 46½ ins. long, less forks. The forks can be hinged back over the truck, retaining the regular over-all length when mov-

ing the vehicle without the load. This is especially valuable when the truck is moved between floors on small elevators or between buildings on highway car-



riers. Features include: all controls in the handle head; deadman-type electric brake; solid flexible connection between battery and drive motor; and sealed ball bearings and self-lubricating bronze bushings. The master drive unit is readily replaceable, according to the release.

TRAY TRUCK

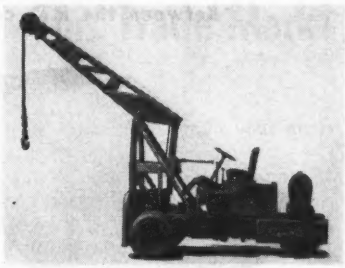
NP17—The Clark Aluminum Book Leaf or Tread Tray Truck is being offered by the All Steel Welded Truck Co. The unit has 36 aluminum shelves on each side and is especially designed for handling rubber extrusions, white sidewall

tire treads and similar products. According to the manufacturer, extrusions may be cut to the exact length desired and will remain so on the aluminum shelf until used with no shrinkage experienced. Tray size is 24" × 72" with 1¼" clearance and protected sides. The truck has a steel frame, roller bearing composition wheels and casters. A tray is raised in its spring mounting and remains in the raised position until lowered. A lock device prevents all trays from coming down at one time. A slotted arrangement is designed to prevent pins on tray from breaking off through abuse. Other models are available for particular requirements and specifications, using a double or single-sided arrangement.

CIRCLE NUMBERS ON THE CARD AND MAIL!

KARRI-GO INDUSTRIAL CRANE

NP18—The Silent Hoist & Crane Co. has developed a five-ton front boom crane. The model has four speeds forward up to 14 MPH, and one speed in reverse. An auxiliary reverse transmission is available, providing all the four speeds for reverse travel. One of the main features is the front wheel drive with steering wheels at the rear. The load rides on a dead axle—the crane can climb a 10 per cent grade with full load on the hook. Safety features in-



clude: load and boom are raised and lowered by power; no part of the boom,

Costs less than a PENNY A DAY!

For efficient material handling at lowest cost . . .

AMERICAN PRESSED-STEEL HAND TRUCKS

INITIAL COST LOW!

Thousands of rugged "American" Hand Trucks are rolling along after ten or more years of hard service. Original cost—less than a penny a day!

Send coupon for latest hand truck bulletin

MAINTENANCE COSTS DROP!

Pressed-steel bolted construction of "American" Trucks keeps maintenance costs down. Steelite® Wheels with sealed-in ball bearings keep grease in, dirt out!

OPERATING COSTS DOWN!

Any man in your plant moves materials efficiently without waiting for specialized equipment. Perfectly balanced—"American" Hand Trucks give you maximum flexibility. You can choose from 50 types and sizes to do any material handling job. Stocked by distributors everywhere.

The American Pulley Company 4292 Wissahickon Ave. Phila. 29, Pa.

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NAME_____ TITLE_____

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ADDRESS_____

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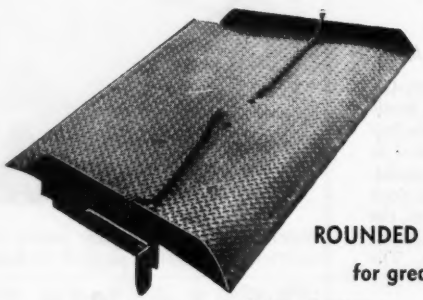
BRIDGE THE GAP

Between the R.R. car and loading dock



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PENCO
HEAVY DUTY
BRIDGE RAMP

featuring

ROUNDED SIDEGUARD CORNERS

for greater maneuverability

Other Features

- COMPLIES WITH ALL SAFETY REGULATIONS
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- 15,000 POUNDS CAPACITY
- DIAMOND SAFETY PLATE
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- CAR DOOR STOPS
- BEVELED EDGES

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725 - 2nd Street, San Francisco, California

cables or chains passes over the driver's head. A single level control is provided for hoisting, power reverse-gear lowering, and holding in neutral.

ADJUSTABLE LOADING DOCK

NP19—The Associated Handling Equipment Co. is offering an adjustable Rite-Hite Loading Dock. A 12″ lateral movement centers the dock to the carrier. Vertical movement adjusts the dock board to the height of over 90 per cent of all carriers (42-54 in.) and provides a non-skid ramp accessible to fork trucks, two wheel vehicles, and lift jacks. Cantilever action with counterweight, located beneath the unit, raises and lowers the dock board. The unit remains in an upright position and the hinged handle folds in when not in use. Overall dimensions are 9′ 9½″ wide × 5′ 1¾″ deep. The carrier end of the dockboard is 6′ wide, increasing to 7′ at its point of attachment to the dock. The entire unit is constructed of ¼″ safety tread steel plate.

SCOOP FOR FORK TRUCK

NP20—An hydraulically-operated scoop that can be quickly mounted on a standard fork lift truck has been introduced by the Yale & Towne Mfg. Co. The scoop comes in varying sizes, ranging from 12 to 27 cu. ft. capacities, and rising 130 ins. before dumping the load.

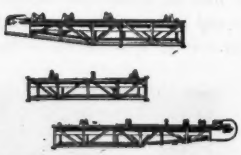
HAISS **FOR 57 YEARS BUILDERS OF QUALITY MATERIAL HANDLING EQUIPMENT**

CAR UNLOADERS for unloading hopper bottom cars. Models 483-484. Belt or Drag.

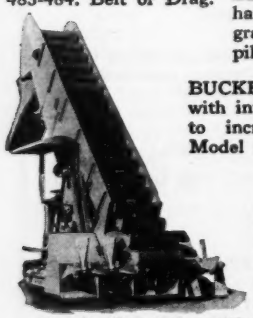
FLAT or TROUGH BELT CONVEYORS for handling coal, coke, sand, gravel, etc. to trucks or piles. Models 481 & 482.

DRAG CONVEYORS for handling all sizes of coal and coke. Model 486.

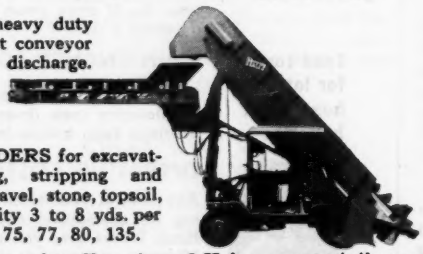
PACKAGE CONVEYORS for handling bags, boxes, crates, cartons, hampers, etc. Model 485.



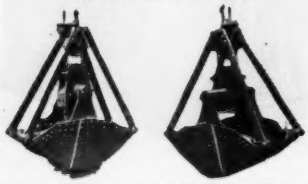
SECTIONAL CONVEYORS made in easily assembled individual sections. Portable or stationary for handling all bulk materials. Model 487.



BUCKET LOADERS, heavy duty with integral swivel belt conveyor to increase zone of discharge. Model SBC.



BUCKET LOADERS for excavating, rehandling, stripping and loading sand, gravel, stone, topsoil, coal, etc. Capacity 3 to 8 yds. per minute. Models 75, 77, 80, 135.



Heavy Duty or Light Duty Clamshell Buckets for high speed excavating or rehandling.

For further information, write, phone or wire. Experienced Haiss representatives are located in all principal cities.

GEORGE HAISS MFG. CO., INC. division of **PETTIBONE MULLIKEN CORP.**

141st to 144th St. on Park Ave. NEW YORK 51, N. Y.
Phone Mott Haven 9-3650

4700 W. Division St. CHICAGO 51, ILL.
Phone Spaulding 2-9300

This attachment is shown mounted on a new "Lift King" gas-powered truck,

which is also manufactured by the Yale & Towne Mfg. Co.

BENCH MODEL AUTOMATIC WEIGHER

NP21—Triangle Package Machinery Co. has announced a Bench Model Automatic Weigher. It is 42" high and is designed to handle a wide range of free-flowing materials. The machine contains an overhead hopper and vibratory feed tray. The material is fed from the hopper across the vibrating tray into a weigh-by bucket. It is said that a fraction of an ounce weight change can be made while the machine is in operation. Filling weights range from one ounce to approximately three lb.

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This familiar sign of Supreme pallets is your guarantee of dependability.

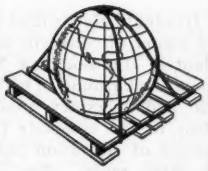
Rugged Supreme pallets and tote boxes are now at lowest prices, but with no sacrifice in quality.

Manufacturing economies plus a source of lumber right at our door make it possible for us to offer the finest products at mass-production prices.

Engineered for high-speed handling and expertly constructed of kiln dried lumber, sturdy Supreme pallets are available in both hardwoods and softwoods.

Wire or write your inquiries and requirements today. We're prepared to ship promptly in any quantity—from 1 to 50 carloads from one of our five mills located nearest you.

Representatives—a few active territories still available for our fine line. Your inquiries are solicited.



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Move the World

SUPREME MANUFACTURING CO.
Bergman, Arkansas
Licensed to Mfg. 4-Way Pallets under Pat. No. 2,369,944.

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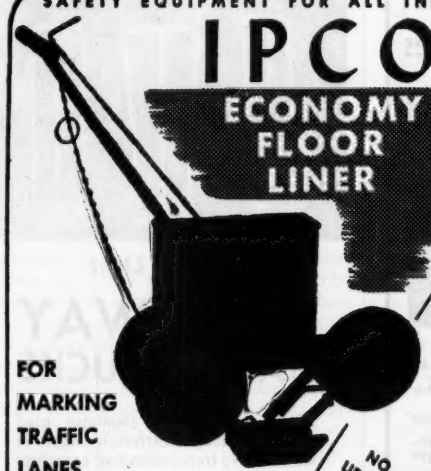
ECONOMY FLOOR LINER



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FOR MARKING TRAFFIC LANES IN PLANTS, LOADING PLATFORMS, STORAGE ROOMS, Etc.

NO UPKEEP • NOTHING TO CLEAN

Operates on a spreader principle. Easily and quickly applied to any firm surface; works close to piled material or other projections. 2½ gal. capacity.

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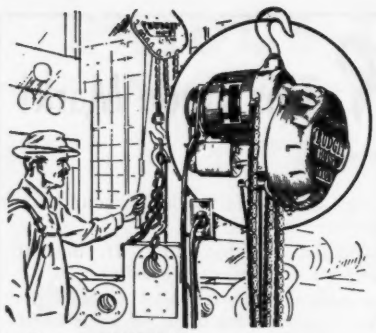

How MUCH you save

You'll never know how much time and money you can save in operating costs on production, assembly, and inspection lines until you install a portable 'Budgit' Electric Hoist to do your lifting of heavy machine parts or the machines themselves.

These small, portable hoists lift up to 4000 lbs. with incredible ease and speed and free your men from the burden of lifting parts to the machines on which they work.

'Budgit' Hoists give you more production at less cost for they permit workers to expend all their energy on profitable work instead of costly lifting. There is more to 'Budgit' lifting than this. Your workers are free from rupture, sprained backs, torn ligaments and you are free from costly compensation to injured men.

Nothing could be simpler, less costly than the installation of a 'Budgit' Hoist. Just hang it up, plug into the nearest electric socket, and use! That's all! The cost of current is small, and maintenance costs negligible due to a 'Budgit' Hoist's efficient design and simple construction.

Test these savings by installing a 'Budgit' Electric Hoist in some spot in your plant where lifting slows up production.

Made in sizes to lift 250, 500, 1,000, 2,000 and 4,000 lbs. Prices start at $119.00. Write for Bulletin No. 391.

'BUDGIT' *Hoists*

MANNING, MAXWELL & MOORE, INC.
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Builders of 'Shaw-Box' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' Industrial and 'Microsen' Electrical Instruments.

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Rates: for "Positions Wanted" $4.00 minimum, limit 25 words. For all other classifications $4.50 minimum for 25 words, each additional word 15c; boldface type or all capitals, $7.50 minimum for 25 words, each additional word 20c; limit 50 words. Box address count as five words. All insertions are payable in advance.

These classified columns are not intended for the advertising of new products by manufacturers, their representatives, or their distributors. These columns are limited to Help Wanted or Positions Wanted advertisements, and for the offering of used equipment by the users of such equipment.

PERSONNEL WANTED

WANTED: Graduate Mechanical Engineer to assist owner of conveyor manufacturing plant in Buffalo, New York. Must have good Background in material handling field and necessary qualifications necessary to run complete plant. Give full resume of education and experience, in first reply. Box 1150, FLOW Magazine.

FOR SALE

WE OFFER, subject to prior sale, several hundred—42″ x 60″, 37″ overall height used corrugated steel tote boxes in excellent condition. Approximately 200 have slotted sides to permit four way fork truck entry. Sides are of 12 gauge corrugated steel and bottom of 9 gauge. Price—$25.00 each, F.O.B. our plant. Ladish Co., Cudahy, Wisconsin.

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WANTED

Fork Lift Trucks — Warehouse Trailers
Hand Pallet Truck — (Rubber Tires)
Hand Electric Trucks — Krane Kars

We Pay High Prices for
USED HANDLING EQUIPMENT

A. & A. MACHINERY CORP.
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Executive specialized in cost reduction through conversion to mechanized Material Handling desires to establish new business connection. Currently employed by national corporation. Age 36. Domestic or foreign assignment considered. Box 1250 Flow Magazine.

IMMEDIATE SHIPMENT
Quality Stacking Boxes

Thousands of them are being used throughout a wide cross section of Industry

SPECIAL FEATURES

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- **Continuous Stacking Rim All Four Sides**
- **Reinforced Corners • Spotwelded Construction • Four Rivets for Extra Strength**
- **Drop Handle Each End**

ALL PRICES F.O.B. PHILADELPHIA

Product Number	804D-18	804D-16
Width	10″	10″
Length	20″	20″
Height	8″	8″
Gauge Steel	18	18
Price Plain	2.07	2.30
Price Green	2.37	2.60

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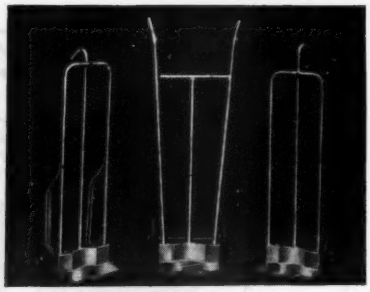
BAY METAL PRODUCTS
1561 W. Indiana Ave.
Philadelphia, 32, Pa.



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ROL-AWAY HAND TRUCKS

These solid-nosed aluminum hand trucks, although extremely light in weight, have tremendous load capacities—a fact which makes them great favorites with truck men. Aluminum alloy construction, patented nose assemply and rubber-tired wheels. There's a place for one of these models in every plant or warehouse.

Send for Illustrated Catalog of ROL-AWAY'S New Line of Trucks

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HONEYMAN MFG. CO.
1217 N. W. Everett St., Portland 9, Ore.

The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

25—Batteries . . . The Edison Storage Battery Division of Thomas A. Edison Inc. offers two bulletins on its line of nickel-iron-alkaline storage batteries. One of the publications stresses operating and construction features of the batteries. Photos show components and completed assemblies; charts give information on current demand and discharge rate, and chemical reactions during charging and discharging. Also included are weights and dimensions of standard batteries in steel cradles and demountable steel boxes. Other sections are devoted to electrical data, standard locations for mounting connectors and connector specifications.

The second of the two bulletins contains case studies involving battery-powered vehicles in warehousing operations, including plants of Sears, Roebuck, Lever Bros., Sherwin-Williams and the Navy Bureau of Supplies and Accounts. Each of the several reports is illustrated with action photos and contains valuable data for the material handling engineer.

26—Freight Elevators . . . "Buyer's Guide of Freight Elevators" is the title of a 44-page manual issued by the Elevator Division of the Westinghouse Electric Corp. This profusely illustrated publication discusses all major factors pertaining to efficient freight elevator service as part of the over-all material handling system. Included are such topics as: types and component parts of freight elevators, how to determine their lifting capacity and size, elevator speed requirements, and types of controls. Other factors relate to door operation; layouts; freight elevator application examples; budget price data; and typical and special installations. Photos, operating data, engineering drawings and charts help explain the principles which are discussed in easy-to-understand language. This manual is recommended as a reference guide for purchasing agents, engineers and production executives.

27—Wire Rope Slings . . . A four-page brochure, available from the Union Wire Rope Corp., offers valuable data on the care and operation of wire rope slings. Topics include safe working loads, types of slings, sling patterns, signals for overhead traveling cranes, signals for locomotive operations and whistle signals for cranes and derricks. More than three dozen drawings illustrate the text. Charts and diagrams give data on fittings.

28—Light Cranes and Monorails . . . Several booklets which treat the subject of light cranes and monorails are offered by the Whiting Corp. Subjects such as "What it Is", "What it Does", and "How To Apply It" give a full explanation of theoretical and practical application data for the equipment. Pictures, drawings and charts accompany the text. Several pages are devoted to specifications, spans and loadings. Pictures and engineering drawings explain fitting assemblies, electrification systems, carriers, load bars, and motor drives. A section about cranes contains photos, drawings and information on hand-pushed cranes, motor-propelled models, transfer cranes, low-headroom units and double-girder cranes.

29—Hyster Attachments . . . Attachments, tools and accessories for use with the Hyster Co.'s lift trucks, straddle trucks and mobile cranes are described in a 28-page catalog. Model views, diagrams, specifications, action photos, cartoons and explanatory data give operating features of the various special-purpose attachments. These include revolving and non-revolving paper roll grabs, hydraulic arms, booms, rams, scoops, side-shift carriages, tile-handling arms, extension forks, cabs and miscellaneous aprons. Optional accessories include special wheels, guards, meters, lights and horns.

30—Skids, Floor Trucks and Dollies . . . The Ironbound Box & Lumber Co. has issued a bulletin describing its line of material handling equipment. Wood and steel framed, caster-mounted dollies; barrel skids; pry bars; two-way and four-way entry skids; and semi-live skids are detailed. Other sections are devoted to special-purpose skids such as those with shelf superstructures, stake pockets and side racks. Stack type skids and pallet boxes and tilt and level type floor trucks are also described. Richly illustrated.

31—Roller Bed Belt Conveyors . . . Light duty roller bed belt conveyors are the subject of a two-color pamphlet issued by the Island Equipment Corp. Overhead, floor and table models are included. Installation photos show the units transporting large plaster molds, clock components and cases of coffee. Technical data are on speed control, replacement of belts, methods of support and arrangement of belts. Line drawings, specifications and charts.

32—Front End Loader . . . Straight lift front end loaders and other attachments for use with industrial tractors are pictured and described in a brochure offered by the Le Roi Co. One tractor with various attachments may be used for construction and maintenance work, moving of material, grading and backfilling, and snow removal. The accessories include a 1000-lb.-capacity crane lift; 1000-lb.-capacity fork lift for boxes crates, etc.; backfill blade; hydraulically-operated material bucket, and snow bucket. Action pictures and specifications.

33—Stencelling Equipment . . . A 88-page, four-color catalog, No. C-47, is available from Marsh Stencil Machine Co. This profusely illustrated publication covers many interesting subjects, including the history of stencils, simple steps to stencil marking, the right way to address shipments, and marking freight. Fountain brushes, stencil cutting machines, stencil inks, felt tip markers and oil stencil boards are discussed and pictured. The catalog points out the many applications of stencils: for addressing shipments, signs and bulletins, file folders and records, identification cards, stock bins and parts, marking office supplies and property identification. Additional uses are described.

34—Steel Strapping . . . Industrial applications of steel strapping are covered in a booklet released by the Brainard Steel Strapping Co. Several dozen photos show strapping used with various products such as skid loads of tires and steel coils, sheet steel, lumber on flat cars, rolls of paper, shipping cases and crates. Several pages are devoted to strapping tools and reels. Each model is pictured and described. Other sections detail heavy-duty strapping equipment and accessories. The latter include corner irons, corner protectors, anchor plates, cement coated staples and nails and strapping seals. Specifications.

35—Wire Rope Slings . . . A. Leschen & Sons Rope Co. is offering Bulletin No. FLS-49 on its "flat-laced" wire rope slings. The product is shown with loads ranging from a 40,900-lb. Diesel truck and a 245,000-lb. stator to a lagged reel of wire rope. Different sling patterns are pictured with various types of lifts. Drawings show internal construction of rope, fittings and sling patterns. Pages are devoted to specifications and charts on dimensions and weights of slings, safe working loads, fittings, and dimensions and weights of hooks, shackles, open sockets, thimbles and hooks.

Use Self-Dumping Containers

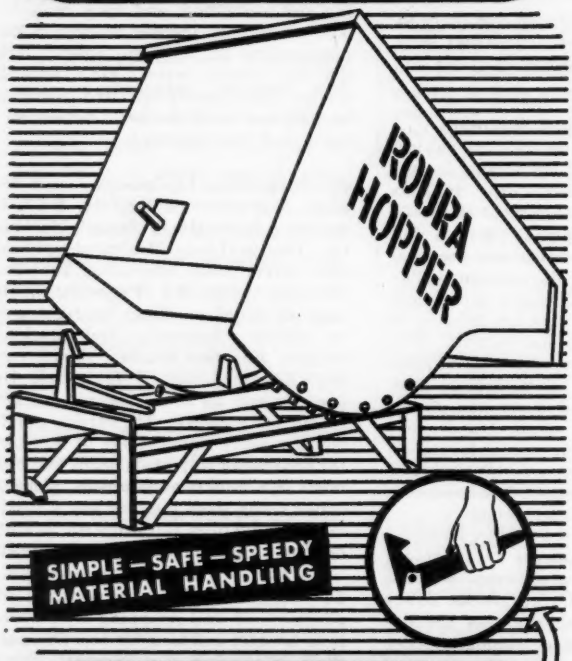
Reduce FATIGUE

WHILE YOU

Step Up PRODUCTION 50%

WITH

ROURA Self-Dumping HOPPERS



Only ROURA Has the Exclusive Instant Release (Patent Pending) Handle

Handling wet or dry, hot or cold, bulky materials quickly and easily, the ROURA is simple to operate—only one man is required for distributing and unloading—and he does this in much less time than ordinarily required under old-fashioned manual methods. Thousands of Roura Hoppers (which fit any standard fork or platform lift truck) are in constant daily operation, serving and saving for such firms as Owens-Illinois Glass, Corning Glass, National Fireproofing, General Motors, Ford, Chrysler, American Brake Shoe, General Electric, Westinghouse, Western Electric, American Steel Foundries, International Harvester, John Deere, etc.

By a simple lift of the exclusive release handle, the ROURA HOPPER dumps, rights and locks itself securely. Sizes—½, ¾, 1, 1½ and 2 cubic yards; the ROURA HOPPER can also be designed for flat trucks and in other sizes to meet specifications. Also, it can be equipped with special flanges that permit stacking to desired tiers for storage or future distribution of materials—conserving valuable floor space. Priced below all competition, the ROURA will quickly pay for itself many times over.

Write today for detailed brochure.
"You Can Save 50% Labor-Time"

ROURA IRON WORKS, Inc.
1411 Woodland Ave. Detroit 11, Mich.

Literature Available From Advertisers In This Issue

(Check corresponding numbers on the enclosed card for the free literature listed below).

A-1. THE HARNISCHFEGER CORP. offers a picture-filled booklet of ideas, applications, specifications, etc., on its electric hoists.

A-2. BRAINARD STEEL CO. Information is available on the company's steel strapping system and methods for strapping various types of loads.

A-3. ELWELL-PARKER ELECTRIC CO. "Scientific Material Handling" is the title of a bulletin offered by this manufacturer of electric and gas trucks.

A-4. BAKER-RAULANG CO. will send data on its new 3000 and 4000-lb.-capacity fork trucks designed for narrow aisles and congested production areas.

A-5. COLES CRANES, INC. Tire-mounted cranes with capacities of 1¾ to 15 tons are the subject of an illustrated publication. Use the postcard bound in this issue to obtain a copy.

A-6. HYSTER CO. is offering bulletins on its line of pneumatic-tired fork trucks with capacities ranging from 2000 lb. to 30,000 lb.

A-7. AEROL CO., INC. The "Aerol Material Handling Manual" describes 355 ways to cut industrial wheel and caster inventories.

A-8. YALE & TOWNE MFG. CO. will send literature on its line of electric hoists, scales, hand lift and power trucks. Mail the postcard bound in this issue to get your free copy.

A-9. BARRETT-CRAVENS CO. offers the "Barrett Junior Catalog" covering the company's line of electric and hand lift trucks, skids, barrel trucks and racks.

A-10. A. B. FARQUHAR CO. Data is available on conveyors for handling packages weighing less than 100 lb. and up to 500 lb. Use the postcard bound in this issue.

A-11. STEPHENS-ADAMSON has published information on its Redler conveyors for transporting bulk materials horizontally and vertically.

A-12. UNION METAL MFG. CO. This company offers complete information on its line of steel boxes, skid platforms, pallets and corrugated skids.

A-13. WHITING CORP. Bulletin H-100B contains illustrations, specifications and operating data on electric hoists.

A-14. PALMER-SHILE CO. offers a catalog on hand trucks, skid platforms, pallets, racks, work tables, box and barrel grabs, boxes and storage bins.

A-15. RICHARDS-WILCOX MFG. CO. has issued a publication on its line of overhead trolley conveyors. Mail the card in this issue to obtain your copy.

A-16. DARNELL CORP. LTD. will send a manual containing information for determining the exact caster or wheel for individual requirements.

A-17. EQUIPMENT MFG., INC. A catalog on prefabricated pallet racks. Specifications, numerous illustrations.

A-18. COLORADO FUEL AND IRON CORP. offers details on enclosed track, bracket-type jib cranes, traveling cranes and monorail installations.

A-19. INDUSTRIAL PRODUCTS CO. A bulletin gives operating information on its line of marking equipment for inside and outside duty.

A-20. ROURA IRON WORKS, INC. A detailed brochure, "You Can Save 50% Labor Time," describes self-dumping hoppers. Mail the card bound in this issue for your copy of any of the publications offered in this column.

Wide Range of

WHEELS & CASTERS

- Solid Rubber or Metal Tread Wheels.
- Pneumatic Rubber Tired Wheels.
- Solid and Cushion Rubber Industrial Tires.
- Casters furnished with Wheels of all types in 200 to 4000 pound capacities.

Write today for full information.

Lansing INDUSTRIAL SALES COMPANY

Manufacturers and Distributors

LANSING 15 MICHIGAN

The REASON FOR

ENGINEERED DESIGN

PALLETS

Use ENGINEERED DESIGN pallets to minimize the problem of yearly inventory. These pallets, manufactured to your exact specifications, are designed to increase the efficiency of your warehouse plan . . . help you use premium storage space wisely, efficiently and economically. Write, wire or phone today . . . inquiries at no obligation.

LICENSED MANUFACTURER OF 4-WAY PALLETS
U. S. Patent #2,369,944

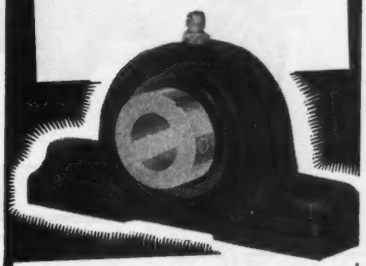
Pallets Incorporated

Manufacturers of
ENGINEERED DESIGN *Pallets*
Glens Falls, N. Y.

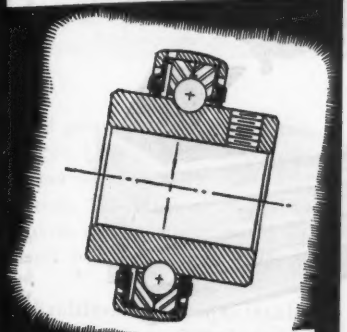
INDEX TO ADVERTISERS

Abell-Howe Co.	55
Acme Pallet Co., Inc.	64
Acme Steel Co.	43
Aerol Co.	12
Allis-Chalmers Mfg. Co.	38
Alvey Ferguson Co.	49
American Monorail Co.	8
American Pulley Co.	65
Anchor Steel & Conveyor Co.	49
Anthony Co.	49
Baker-Raulang Co.	9
Barrett-Cravens Co.	14
Bay Metal Products	68
Belt Corp.	35
Brainard Steel Co.	4
E. W. Buschman Co.	40
C & D Batteries, Inc.	16
Calabar Corp.	51
Coles Cranes, Inc.	10
Colorado Fuel & Iron Corp.	54
Colson Equipment & Supply Co.	51
Consulting Engineers	38
Cullen-Friestedt Co.	50
Darnell Corp.	46
Dempster Bros., Inc.	72
Thos. A. Edison, Inc.	34
Electric Storage Battery Co.	15
Elwell-Parker Electric Co.	5
Equipment Mfg., Inc.	51
A. B. Farquhar Co.	28
Faultless Caster Corp.	Inside Back Cover
Dave Fischbein Co.	41
General Electric Co.	6 & 7
Globe Hoist Co.	44
Geo. Haiss Mfg. Co., Inc.	66
Harnischfeger Corp.	Inside Front Cover
Honeyman Mfg. Co.	68
Frank G. Hough Co.	2
Hyster Co.	11
Industrial Products Co., Inc.	67
Lansing Industrial Sales Co.	71
Lewis-Shepard Products, Inc.	24
Magnesium Co. of America	48
Manning, Maxwell & Moore, Inc.	68
Mansaver Industries, Inc.	40
Monarch Rubber Co.	52
Pallets, Inc.	71
Palmer-Shile Co.	39
Penco Engineering Co.	66
Powell Pressed Steel Co.	1
Rapids-Standard Co.	25
Richards-Wilcox Mfg. Co.	45
Roberts Machine Works	71
Rolock, Inc.	40
Ross Carrier Co.	29
Rotary Lift Co.	55
Roura Iron Works	70
Silent Hoist & Crane Co.	47
Stanley Works, The	56
Stephens-Adamson Mfg. Co.	31
Supreme Mfg. Co.	67
Towmotor Corp.	21
Truscon Steel Co.	23
Union Metal Mfg. Co.	33
Unit Crane & Shovel Corp.	30
West Bend Equipment Co.	53
Whiting Corp.	35
Williford Mfg. Co.	67
Yale & Towne Mfg. Co.	13

Cut Your Manufacturing Costs *with* Self-Aligning, Completely Sealed *Roberts* BALL BEARINGS



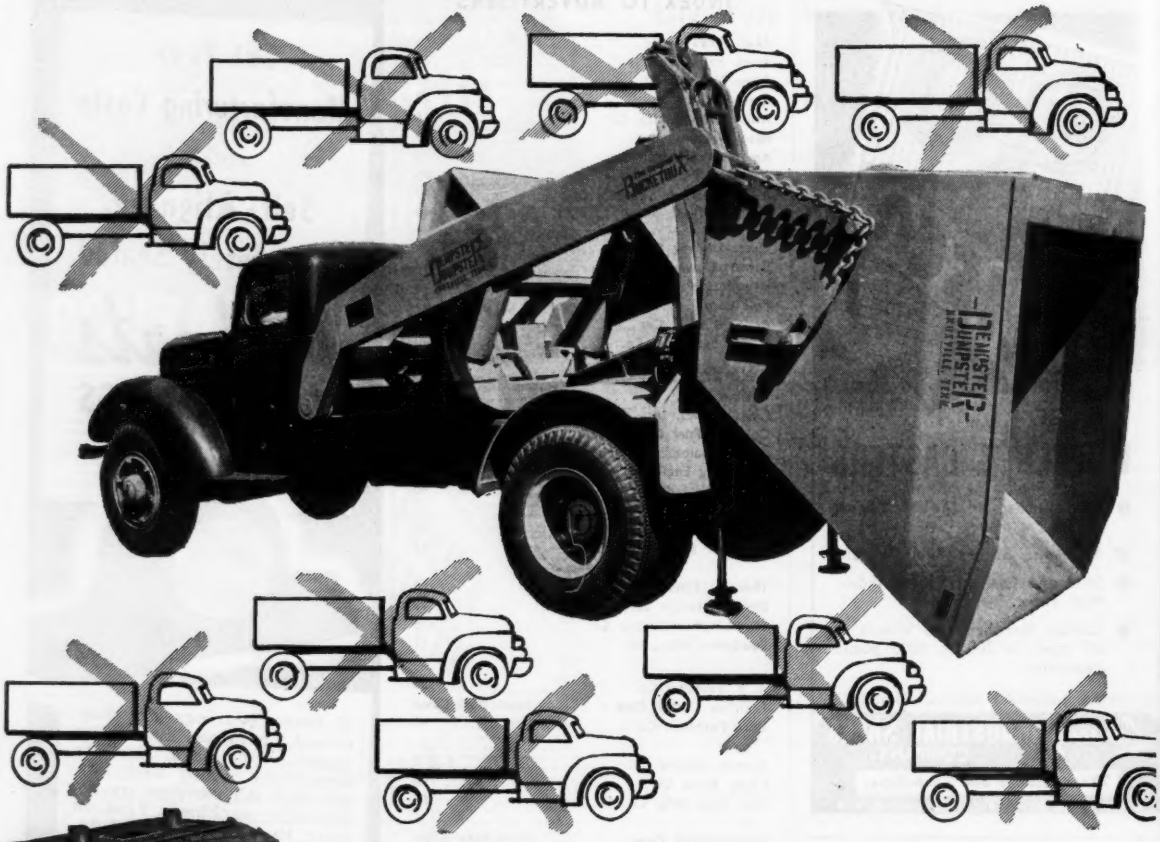
Roberts bearings are machined, hardened and have unground raceways. They are completely sealed and self-aligning. All castings are accurately machined. Low in cost, they are specially designed for thousands of applications within loads and speeds recommended.

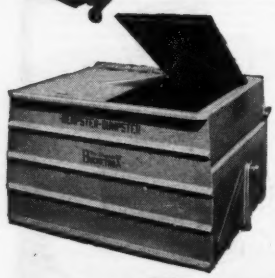


Roberts bearings are sold in pillow blocks and flange units, or by themselves for use in your own stampings or housings. Either type is excellent for conveyors, farm machinery and similar applications. Write for catalog, engineering advice and prices.

Agents, distributors and dealers wanted

Roberts
MACHINE WORKS
1619 Hennepin Avenue
Minneapolis 3, Minnesota





WOULD YOU WRITE A LETTER FOR FIFTY THOUSAND DOLLARS?

A simple reply to one of our advertisements . . . a meeting of probing minds over the problems involved . . . the replacing of ten conventional trucks with only one Dempster-Dumpster truck unit and 99 containers . . . fifty thousand dollars annual savings for this one firm.

That, briefly, was the result of a simple inquiry for information about the Dempster-Dumpster System of materials handling.

A comprehensive Dempster-Dumpster survey revealed costly delays, unnecessary handling of materials, and much time wasted by loading crews. All were eliminated to the tune of $50,000 savings annually. Fast pick-up, hauling and dumping of pre-loaded Dempster-Dumpster containers replaced the old method of plant hauling. Ninety-nine detachable containers, built in over 20 sizes and designs for the specific materials they handle, were spotted at material accumulation points. Some are handled by fork trucks, others by overhead cranes within plant buildings. As containers are filled, the Dempster-Dumpster truck hoisting unit and one man, the driver, picks up each container, hauls it to its destination, dumps it and returns the empty container for refilling.

Pick-up and dumping of these detachable containers takes less than 60 seconds. The entire operation works to an on-the-run schedule. One truck hoisting unit handling 99 containers and doing the work formerly requiring ten conventional trucks. Let us bring you the complete details of the Dempster-Dumpster System.

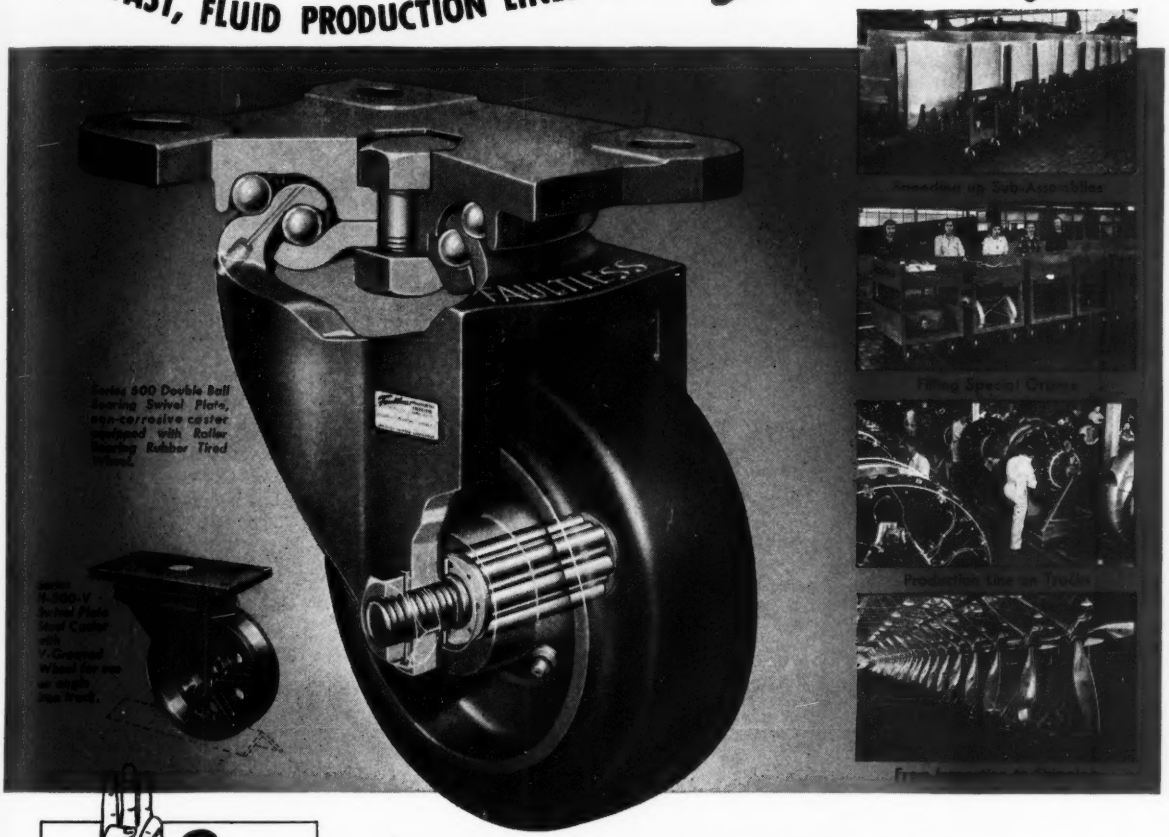
Containers, in standard and special types, in capacities from 1½ to 10 cu. yds. are available. Whatever your materials are, be they heavy, light, bulky, dust, liquid, waste, raw or finished, you'll find a Dempster-Dumpster container ready, or custom built, to do the job more efficiently.

DEMPSTER DUMPSTER® TRADE MARK REG. SYSTEM

DEMPSTER BROTHERS, Inc., 810 N. Knox, Knoxville 17, Tennessee

Flexibility

WITH FAST, FLUID PRODUCTION LINES CUTTING HANDLING COSTS



Save costs 3 ways!

1. **PRODUCTION:** Higher production costs demand new *short cuts* . . . from receiving to shipping platforms. Faultless Casters speed up the *flow of materials.*
2. **MAN-HOURS:** Cutting handling time, *accounting for over 20% of industry's man-hours,* provides your greatest opportunity for gains in worker productivity—unit output.
3. **FLOORS:** No need for costly floor alterations or floor covering —Faultless wheels are available for all types of floor surfaces and loads.

With world recovery dependent on increased production, no one can tolerate slow-downs due to equipment failures. Hence, the added efficiency and durability of Faultless Casters *engineered* to endure loads and shocks of severe service, gain extra importance. In addition to saving man-hours in the handling of mobile equipment, due to easier performance of Faultless Casters, there's a clear profit from the extra mileage they give.

There is a smooth rolling, easy swiveling Faultless Caster specifically engineered for *your* load, speed and floor requirements. Simply select it from Bulletin 156, or let our nearest sales engineer come in for consultation, no obligation.

NOELTING Faultless

ENGINEERED CASTERS

FAULTLESS CASTER CORPORATION DEPT. F-5, EVANSVILLE 7, IND.

Branches in Atlanta, Boston, Chicago, Dallas, Detroit, High Point, Los Angeles, New York, St. Louis. Canada: Stratford, Ontario

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MORE THAN 26,000
READER—BUYERS

TO
REACH THE BUYERS
USE . . .

THE "C.B.P." Plan

FOR

- √ *Authenticated Readers*
- √ *Complete Market Coverage*
- √ *Lowered Sales Costs*
- √ *Greater Sales Volume*

THE WHY! WHAT! and HOW! of C. B. P.

Currently FLOW has over 26,000 readers. FLOW reaches more than just "people"—or "names"—or "positions"—it reaches BUYERS. In addition to the C C A QUANTITY guarantee of circulation, FLOW now gives the advertiser an added quality value through the C B P (Certified Buying Power) plan. The plan was established after carefully selecting 46 outstanding material handling equipment distributors located in key marketing areas throughout the nation.

EACH DISTRIBUTOR—A FLOW CIRCULATION MANAGER

Each distributor subscribes for his active and most important material handling equipment customers, and for his best prospects. The distributor pays us $1.44 per year per subscription. These constitute an "identifiable" readership composed of authenticated, known buyers and users . . . the distributors being the authenticating agents! Thus—under "C B P"—Readers and Buyers become synonomous and interchangeable terms . . . whether you—as the manufacturer—sell direct or through distributors—FLOW guarantees CERTIFIED BUYING POWER. These 26,000 reader-buyers comprise the known national market for material handling equipment and, therefore, are the people to whom you must tell your story. Here is "CERTIFIED BUYING POWER"—around which you can most profitably build your sales and merchandising campaign.

Flow MAGAZINE

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